PUBLIC DEBT, PUBLIC DEBT SERVICE AND ECONOMIC GROWTH NEXUS: EMPIRICAL EVIDENCE FROM THREE SOUTHERN AFRICAN COUNTRIES

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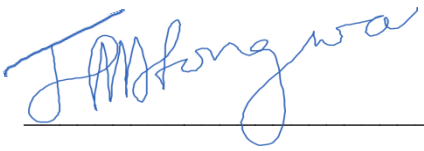

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ABSTRACT

This study examines the public debt, public debt service and economic growth nexus in Zambia, Zimbabwe and South Africa using time-series data from 1970 to 2017. This research provides empirical evidence to contribute, firstly, to the ongoing public policy debate regarding the dynamic relationship between public debt, public debt service and economic growth, and their causal relationship; and secondly, to the relative impact of domestic and foreign public debt on economic growth in the selected study countries. For this purpose, four empirical models were utilised and estimated using the Autoregressive Distributed Lag (ARDL) bounds to cointegration and the error correction ARDL-based causality test. Model 1 explored the impact of aggregate public debt on economic growth, while Model 2 investigated the relative impact of domestic and foreign public debt on economic growth. Model 3 examined the impact of public debt service on economic growth, whereas the causality between aggregate public debt and economic growth, and between public debt service and economic growth is tested in Model 4a and Model 4b, respectively. Results show that in Model 1, aggregate public debt has a positive impact on economic growth in Zambia but is negative in Zimbabwe and South Africa. In Model 2, domestic public debt negatively impacts economic growth in Zambia and Zimbabwe and positive impact in South Africa. In addition, foreign public debt has a positive impact on economic growth in Zambia and negative impact in Zimbabwe and South Africa. The results from Model 3 largely support a negative relationship between public debt service and economic growth in Zambia and Zimbabwe, and an insignificant relationship in South Africa. The causality results for Model 4a indicate that it is economic growth that drives public debt in all the study countries. Finally, no causal relationship between public debt service and economic growth was confirmed in all the study countries (Model 4b).

KEY WORDS

Public Debt, Domestic Public Debt, Foreign Public Debt, Economic Growth, ARDL Bounds Testing Approach, Cointegration, Granger-Causality, Southern African Countries, Zambia, Zimbabwe, South Africa.

DEDICATION

To everyone who supported me during my studies.

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LIST OF ACRONYMS

ADF	Augmented Dickey-Fuller
AfDB	African Development Bank
AfDF	African Development Fund
AFRODAD	African Forum and Network on Debt and Development
AG	Auditor-General
AIC	Akaike Information Criterion
ALM	Asset and Liability Management
ARDL	Autoregressive Distributed Lag
ASGISA	Accelerated and Shared Growth Initiative for South Africa
ASPEF	Agriculture Sector Productivity Enhancement Facility
BACOSSI	Basic Commodity Supply Side Intervention Facility
BAS	Basic Accounting System
BESA	Bond Exchange of South Africa Limited
BIC	Schwartz-Bayesian Information Criterion
BOP	Balance of Payment
BOZ	Bank of Zambia
CBZ	Commercial Bank of Zimbabwe
Cottco	Cotton Company of Zimbabwe
CSO	Central Statistical Office
CUSUM	Cumulative Sum of Recursive Residuals
CUSUMQ	Cumulative Sum of Squares of Recursive Residuals
DF	Dickey-Fuller Test
DF-GLS	Dickey-Fuller Generalised Least Squares
DFID	Development Finance International
DFIs	Development Financial Institutions
DSA	Debt Sustainability Analyses
DT	Deterministic Trend
DW	Durbin-Watson Criterion

DZL	Dairibord Zimbabwe Ltd
ECM	Error Correction Model
EFF	Extended Fund Facility
ELCC	External Loans Coordination Committee
ESAF	Enhanced Structural Adjustment Facility
ESAP	Economic Structural Adjustment Programme
EU	European Union
FDS	Financial Deductions Systems
FML	Full-Maximum Likelihood
FNDP	Fifth National Development Plan
FSDP	Financial Sector Development Plan
GDP	Gross Domestic Product
GDRM	Government Debt and Risk Management Programme
GEAR	Growth Employment and Redistribution
GLS	Generalised Least Squares
GMM	Generalised Methods of Moments
GNI	Gross National Income
GNP	Gross National Product
GNU	Government of National Unity
GoZ	Government of the Republic of Zimbabwe
GRZ	Government of the Republic of Zambia
GSA	Government of the Republic of South Africa
HIPCs	Highly Indebted Poor Countries
IDA	International Development Agency
IDBZ	Infrastructure Development Bank of Zimbabwe
IFI	International Financial Institutions
IFMIS	Integrated Financial Management Information System
IMF	International Monetary Fund
IMT	Intermediated Money Transfer

IO Model	Innovative Outlier Model
MDRI	Multilateral Debt Relief Initiative
MEFMI	Macroeconomic and Financial Management Institute of Eastern and Southern Africa
MERP	Millennium Economic Recovery Programme
MOF	Ministry of Finance
MOFED	Ministry of Finance and Economic Development
MTDS	Medium-Term Debt Management Strategy
MTP	Medium-Term Policy
NEDPP	National Economic Development Priority Programme
NERP	National Economic Revival Programme
NGP	New Growth Path
NRZ	National Railway of Zimbabwe
OA Model	Additive Outlier Model
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
OPEC	Organisation of the Petroleum Exporting Countries
OSSREA	Organisation for Social Science Research for Southern and Eastern Africa
PAYE	Pay as You Earn
PD	Public Debt
PDS	Public Debt Service
PERSAL	Personnel and Salary Administration System
PETS	Public Expenditure Tracking Surveys
PFM	Public Finance Management
PLARP	Parastatals and Local Authorities Reorientation Programme
PP	Phillips-Perron
PPG	Public and Publicly Guaranteed
PRP	Parastatal Reorientation Programme
PPURoot	Perron (1997)

PSDRP	Private Sector Development Program
PSF	Productive Sector Facility
PSTR	Panel Smooth Threshold Regression
RAP	Rights Accumulation Programme
RBZ	Reserve Bank of Zimbabwe
RDP	Reconstruction and Development Programme
REH	Ricardian Equivalence Hypothesis
RGDP	Real Gross Domestic Product
SADC	Southern Africa Development Community
SAF	Structural Adjustment Facility
SAPs	Structural Adjustment Programs
SARB	South African Reserve Bank
SARS	South African Revenue Service
SDR	Special Drawing Rights
SGMM	System Generalised Method of Moments
SIC	Schwartz Information Criterion
SIDA	Swedish International Development Cooperation Agency
SMP	Staff Monitored Programme
SSA	Sub-Saharan African
STERP	Short-Term Emergency Recovery Programme
SVAR	Structural Vector Autoregressive
TSA	Treasury Single Account
UDI	Unilateral Declaration of Independence
UNCTAD	United Nations Conference on Trade and Development
UNECA	United Nations Economic Commission for Africa
UNDP	United Nations Development Programme
US$/USD	United States Dollars
VAR	Vector Autoregressive
VAT	Value-Added Tax

VECM	Vector Error Correction Model
XGS	Exports of Goods and Services
ZAADDS	Zimbabwe Accelerated Arrears Clearance, Debt and Development Strategy
ZAREP	Zimbabwe Accelerated Re-engagement Economic Programme
ZEDS	Zimbabwe Economic Development Strategy
ZEPARU	Zimbabwe Economic Policy Analysis and Research Unit
ZETDC	Zimbabwe Electricity and Transmission Distribution Company
ZIMASSET	Zimbabwe Agenda for Sustainable Socio-Economic Transformation
ZIMCODD	Zimbabwe Coalition of Debt and Development
ZIMPREST	Zimbabwe Programme for Economic and Social Transformation
ZIMRA	Zimbabwe Revenue Authority
ZIPAR	Zambia Institute for Policy Analysis and Research
ZMK	Zambian Kwacha
Z$	Zimbabwean Dollar
ZUPCO	Zimbabwe United Passenger Company

CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Background to the study

The debate concerning the linkage between public debt and economic growth, and between public debt service and economic growth among policymakers has been acknowledged for many years, but after 1998, the contest became increasingly fierce and subject to misrepresentation. The resurgence of successive financial, economic and public debt crises that adversely affected most world economies beginning 1998 intensified the debate (International Monetary Fund (IMF), 2014a). From these recent empirical discussions, it became apparent that the relationship between sovereign debt and economic growth is not clear but that it is heterogeneous across countries and periods. The IMF (2012a: 9) concluded that "…there is no simple relationship between debt and growth ... There are many factors that matter for a country's growth and debt performance".

Although a large body of existing literature on the relationship between public debt and economic growth supports a negative relationship through future policy uncertainty, crowding out effect and fiscal illusion (Mhlaba & Phiri, 2019; Huang *et al.,* 2018; Sachs, 1989), two alternative views still exist. The first argument purports the impact of public debt on economic growth to be positive (Gómez-Puig & Sosvilla-Rivero, 2018; Spilioti & Vamvoukas, 2015). The second argument is on the neutrality of public debt on economic growth (Kourtellos *et al.*, 2013; Tchereni *et al.*, 2013).

There are also other divergent views where some studies support a nonlinear relationship between public debt and economic growth (Mupunga & Le Roux, 2015; Eberhardt & Presbitero, 2015). This view, however, is outside the scope of this study.

Previous empirical studies on the subject have focused mostly on the relationship between aggregate public debt and economic growth, affording the relative impact of domestic and foreign public debt on economic growth very little coverage (Huang *et al.,* 2018; Panizza & Presbitero, 2014; Reinhart *et al.,* 2012). More so, the findings of the limited studies undertaken on the relative impact of domestic and foreign public

debt on economic growth are inconclusive (Akram, 2016; 2015; Akhter & Hassan, 2012; Adams & Bevan, 2005). Although some found evidence consistent with a positive relationship between domestic public debt and economic growth, others established a negative relationship between the two variables. Furthermore, other studies maintain that domestic public debt has more crowding out effects on economic growth compared to its foreign counterpart (Akram, 2016; 2015).

Apart from differing views in both theoretical and empirical literature on the general relationship between public debt (domestic and foreign) and economic growth, there is the debate on the impact of public debt service on economic growth. Two opposing theoretical views exist. First, is the view that public debt service negatively affects economic growth through: (1) liquidity constraint hypothesis (Moss & Chiang, 2003); (2) crowding out effect (Chowdhury, 2004; Elbadawi *et al.,* 1997; Sachs, 1989); (3) fiscal policy space constraints; and (iv) future public policy uncertainties (IMF, 2018; 2014a; Cecchetti, *et al.,* 2012; Cochrane, 2011a; 2011b). Second, is the body of literature asserting that the link between public debt service and economic growth is non-existent (Barro, 1989).

Similar to the overall impact of public debt on economic growth, and public debt service on economic growth is the lack of consensus on the direction of causality between public debt and economic growth, and between public debt service and economic growth. Unlike in the former scenario, the empirical literature on the direction of causality between public debt service and economic growth is still insufficient, and the results are mixed.

Against this background, previous studies on the impact of public debt on economic growth, and public debt service and economic growth have not been consistent (Gómez-Puig & Sosvilla-Rivero, 2018; Akram, 2016; 2015; Baum *et al.,* 2013). The current study aims to take the public debt, public debt service and economic growth nexus debate a step closer to its conclusion in three Southern African countries, as well as proffer policy recommendations to the relevant policymakers – thus helping the economies studied here to move to optimal growth paths and achieve the newly defined Sustainable Development Goals.

In order to examine and provide new country-focused evidence on the impact of public debt (domestic and foreign) and public debt service on economic growth; and establish the direction of causality between aggregate public debt and economic growth and between public debt service and economic growth, there are three Southern African economies incorporated in this study. These are Zambia, Zimbabwe and South Africa. The selected countries constitute a general cross-section of the overall economic, financial and public debt structures in many Southern African economies. For instance, the selected countries are at different levels of economic development, enabling cross-country comparisons. According to the 2018 World Bank's world economies income classification, South Africa is in the upper-middle-income category, while Zambia and Zimbabwe are in the lower-middle-income and low-income categories, respectively (World Bank, 2018a).

Furthermore, South Africa has a high proportion of its public debt denominated in local currency (Rands). In other words, South Africa relatively depends more on domestic debt than foreign debt, which is contrary to the case of Zambia and Zimbabwe (South African Reserve Bank, 2018; Bank of Zambia, 2018a; 2018b; Reserve Bank of Zimbabwe, 2018a).

Also, the chosen three countries are among the few Southern African countries with consistently available and reliable time-series data on the public debt (domestic and foreign), public debt service and economic growth. Lastly, the countries are among the economies in Southern African Development Community (SADC) where scarce empirical evidence exists concerning the relative impact of domestic and foreign public debt on economic growth.

1.2 Statement of the problem

The resurgence of the financial and public debt crises that affected several countries across the globe since 1998 again emphasised the need to re-examine this issue with the risks of high and increasing public sector indebtedness – including its composition and structure – and its impact on economic growth. A blend of low economic growth rates and ever-increasing budget deficits has forced most world governments, including SADC governments, to either borrow from both domestic and international sources or revert to money printing to suppress the effects of recession (Reinhart *et*

al., 2012). These high public debts (domestic and foreign) and the associated high repayment costs have not only reduced the fiscal space of both low-income and middle-income countries but also crippled governments' effort to reduce poverty and soaring unemployment rates (IMF, 2018; Kobayashi, 2015; Claessens & Kose, 2013). Thus, the debate surrounding the impact of public debt (domestic and foreign) and public debt service on economic growth resurfaced at a time when most world countries are battling to transform their economies to attain sustainable economic growths and boost the welfare standards of its citizen (Claessens *et al*., 2012).

Among the empirical work carried out, the results are mixed. Numerous studies found the accumulation of public debt and repayment costs as growth-inhibiting (Huang *et al.,* 2018; Gómez-Puig & Sosvilla-Rivero, 2018). Others found that debt-financed expansionary fiscal policies positively affect economic growth (Kobayashi, 2015; Spilioti & Vamvoukas, 2015; DeLong & Summers, 2012). To date, few studies established evidence consistent with the Ricardian Equivalence Hypothesis, which asserts that public debt or public debt service do not affect economic growth (Akram, 2016; 2015; Tchereni *et al.*, 2013; Barro, 1989).

Moreover, there is also unresolved debate on the debt-growth causal relationship despite the growing need for governments in the developing world to find lasting solutions to sustainable economic growth paths. Causality test results differ from one study to the other (Donayre & Taivan, 2017; Gómez-Puig & Sosvilla-Rivero, 2015). It is against this background that the study empirically tests the dynamic impact of aggregate public debt, the relative impact of domestic and foreign public debt, and the impact of public debt service on economic growth in the selected Southern African economies. Therefore, this research contributes to the ongoing debt-growth debate and also assisting with the formulation of government debt and economic growth policies.

The study uses one of the most modern and advanced econometric techniques – the ARDL bounds testing approach to carry out all analysis and to guide policy in these study economies meaningfully. The study also examines the causal relationship between public debt and economic growth, and between public debt service and economic growth within a multivariate Granger-causality framework. The inconsistent

results from the currently available causality studies on the topic point to the necessity for an updated study on the debt-growth nexus in the study countries.

1.3 Objectives and hypotheses of the study

1.3.1 Objectives of the study

The primary objective of this study is to empirically investigate the public debt, public debt service and economic growth nexus in Zambia, Zimbabwe and South Africa for the sample period 1970-2017.

The specific objectives of this study are to examine:

(i) the impact of aggregated public debt on economic growth in three Southern African countries, namely; Zambia, Zimbabwe and South Africa.

(ii) the relative impact of disaggregated public debt (domestic and foreign) on economic growth in the selected Southern African countries.

(iii) the impact of public debt service on economic growth in the selected Southern African countries.

(iv) the causality between aggregate public debt and economic growth in the selected Southern African countries.

(v) the causality between public debt service and economic growth in the selected Southern African countries.

1.3.2 Research hypotheses

This study tests the following hypotheses:

(i) aggregate public debt negatively impacts economic growth in the selected three Southern African countries.

(ii) domestic and foreign public debt negatively impacts economic growth in the selected three Southern African countries.

(iii) public debt service negatively impacts economic growth in the selected three Southern African countries.

(iv) there is a unidirectional causal flow from aggregate public debt to economic growth in these countries.

(v) there is a unidirectional causal flow from public debt service to economic growth in these countries.

1.4 Significance of the study

This study differentiates itself from the bulk of the related research on the subject in numerous ways. First, previous studies on the subject have tested either the impact of aggregate public debt or public debt service on economic growth only, while this study makes some critical distinctions in its analyses, thereby making it a more specific and comprehensive analysis (Spilioti & Vamvoukas, 2015; Reinhart & Rogoff, 2010a; 2010b). The study jointly analyses the impact of aggregate public debt and public debt service on economic growth. It then further splits public debt into domestic and foreign components and simultaneously, investigates the relative impact of each component on economic growth.

Second, unlike some of the previous studies which could have suffered from omission-of-variable bias by utilising bivariate causality tests, this study re-examines the causal flow between aggregate public debt and economic growth, and between public debt service and economic growth in a multivariate setting (Donayre & Taivan, 2017; Gómez-Puig & Sosvilla-Rivero, 2015; Reinhart & Rogoff, 2010a). The incorporation of intermittent variables into the causality framework, which has not been widely used in most previous studies, increases the overall predictive strength of the causation test (Loizides & Vamvoukas, 2005; Lutkepohl, 1982).

Third, the use of the bounds testing approach to cointegration, developed within an ARDL model, is not widely used to carry out both the impact analysis and causality tests. The chosen ARDL approach has the strength of yielding unbiased estimates even in small or finite data sample sizes, even when some of the regressors are endogenous (Narayan, 2004; Pesaran *et al*., 2001).

Fourth, the majority of the previous studies that have examined the relationship between public debt and economic growth have been conducted predominantly based on cross-sectional data analysis (Chudik *et al.,* 2017; Savvides,1992). Cross-sectional grouping of countries that have adopted different economic management systems may fail to satisfactorily account for the important country-specific features (Khan & Kumar, 1997). However, this research uses annual time-series data and one of the recently developed econometric estimation techniques and softwares. Thus, the chosen time-series approach makes it possible to incorporate diverse factors across countries and periods, and thus provide country-specific results and policy recommendations.

Finally, this study focuses on countries at varying stages of economic development, and with different public debt compositions. Hence, this approach makes it possible to provide country-specific policy recommendations as well as cross-comparisons of results for the countries under study.

The researcher believes that the body of economic knowledge stands to gain from this study by extending the public debt-economic growth nexus debate to the Southern African countries (Zambia, Zimbabwe and South Africa) and providing new information on this association through the application of contemporary econometric techniques. Thus, the study findings could provide valuable policy guidance on debt-growth matters in these countries.

1.5 Organisation of the study

The remainder of the study is structured as follows:

- Chapter 2 reviews country-based literature on public debt and economic growth, and public debt service and economic growth in Zambia.
- Chapter 3 discusses country-based literature on public debt and economic growth, and public debt service and economic growth in Zimbabwe.
- Chapter 4 considers country-based literature on public debt and economic growth, and public debt service and economic growth in South Africa.

Thus, the economic, financial and public debt developments and experiences of these countries presented in Chapters 2 to 4 serve as a basis for the empirical examination

of public debt, public debt service and economic growth nexus presented in Chapters 6 and 7.

- In Chapter 5, the study reviews existing theoretical and empirical literature on the impact of public debt on economic growth, and of public debt service on economic growth, as well as literature on the causality between public debt and economic growth, and between public debt service and economic growth.
- Chapter 6 discusses the study methodology and estimation techniques.
- Chapter 7 presents and discusses the econometric analysis and empirical findings.
- Chapter 8 concludes the study and provides some policy recommendations based on the empirical outcomes presented in Chapter 7. The chapter also suggests areas for further research on the subject.

CHAPTER TWO

PUBLIC DEBT, PUBLIC DEBT SERVICE AND ECONOMIC GROWTH IN ZAMBIA

2.1 Introduction

This chapter deals with the dynamics of public debt, public debt service and economic growth in Zambia. The chapter is structured into four major sections. Section 2.2 discusses public debt and economic growth dynamics in Zambia and has four sub-sections that examine the following issues: an overview of the evolution of public debt in Zambia, public debt reform, trends and challenges facing public debt management in Zambia. Section 2.3 discusses public debt service and economic growth dynamics in Zambia and is further divided into four sub-sections, namely: an overview of the evolution of public debt service in Zambia; public debt service reforms; trends in public debt service and economic growth in Zambia and challenges affecting public debt service management in Zambia. Section 2.4 concludes the chapter.

2.2 The dynamics of public debt in Zambia

2.2.1 The evolution of public debt in Zambia

The public debt of Zambia composes of domestic and foreign debt. As such, the evolution of Zambia's public indebtedness stems from growing domestic borrowing and foreign loans, both concessional and non-concessional. Similar to many developing countries, Zambia's profound public indebtedness was a result of the government's need to bridge the fiscal gap, which was a product of copious factors ranging from periodic droughts, massive infrastructural developments, public sector financial indiscipline, growing social demands and economic misfortunes, locally and globally (World Bank, 2018a; Fraser & Larmer, 2010; McCulloch *et al.,* 2000a). Hence, domestic and foreign borrowing by the Government of Zambia (GRZ) remained an essential part of resource mobilisation for the sake of financing rising fiscal imbalances (Bank of Zambia (BOZ), 2015a).

Faced with a multiplicity of economic, political, financial and social problems, the Zambian government had several available financing options for its ever-increasing

public expenditure demands. According to the Development Finance International (DFID) (2015), between 1973 and 2000, the government resorted to excessive money printing, domestic and foreign borrowing – mostly on a non-concessional basis – and a rundown of export earnings at the central bank. However, each option had its challenges for the Zambian economy. Accordingly, the dynamics of the Zambian public indebtedness are centred mostly on the fiscal operations of the government, which also evolved due to changes in political administration, as well as global economic developments.

Prior to 1970, Zambia's economy was mainly stable, and the government's overall fiscal balance and BOP were both in surplus (World Bank, 2018a). As a result, the fiscal policy of Zambia was mostly an administrative tool to guide government expenditures and raise revenues (Chakaodza, 1993). This period was also associated with positive economic growth rates, averaging 6.9% per annum, with gross national savings and investment in excess of 30% of Gross Domestic Product (GDP) (United Nations Development Programme (UNDP), 2006). The state had high foreign exchange reserves from exports of raw copper, fetching extremely high prices on the global markets (Saasa, 2010; Hill & McPherson, 2004). These foreign exchange reserves amounted to approximately 12 months of import cover, and as a result, government borrowing, both domestic and foreign, was considered undesirable (Saasa, 2010; GRZ, 2006a). Total domestic and foreign public debts were US$177.3 million and US$132.2 million, respectively, in 1970 (Andersson *et al.*, 2000).

However, the cumulative effect of the nationalisation program, which the government of Zambia termed the "Africanisation program", and the global economic recession of the mid-1970s, exacerbated the macroeconomic instability in this country (Langmead *et al*., 2006). Consequently, Zambia plunged into severe budget and balance of payment problems, forcing the authorities to rely on debt financing (GRZ, 1979; 1972; 1966).

The public debt burden of Zambia was further worsened by the perceived country risk owing to domestic politics, which adversely affected domestic and foreign investments, as well as the inflow of foreign aid (Hill & McPherson, 2004). Ultimately, by the mid-1980s, Zambia was in a critical public debt crisis, becoming one of the most highly indebted nations in the world (Andersson *et al.*, 2000). The high public debt started to

impede the country's economic and social progress, resulting in its consideration for debt relief by its major creditors, that is, the World Bank, the IMF and the Paris Club (Andersson *et al.,* 2000). Subsequently, Zambia benefitted from huge debt relief mostly from the International Financial Institutions (IFIs) and the Paris Club members from the early 1990s until 2006 (IMF, 2008a; IMF and the International Development Agency (IDA), 2000).

Following the debt relief programmes, Zambia's foreign public debt stock reduced to nearly US$1.2 billion in 2005 (IMF, 2005a). However, Zambia tapped from the local and foreign capital markets, and as a result, the public debt stocks have been on an upward trajectory since 2006. By October 2017, the World Bank and IMF (IMF, 2017a) considered Zambia to be at high risk of debt distress. Hence, a new approach to public debt management is essential to save the country from plunging into another public debt crisis in the future.

2.2.2 Public debt reforms in Zambia

A variety of issues over the years resulted in Zambia's public sector indebtedness, including natural factors (such as periodic and devastating droughts), deteriorating terms of trade for commodity exports, poor gross investment levels, massive infrastructural developments, public sector financial indiscipline, and increasing social demands (World Bank, 2017a; Andersson *et al.,* 2000). These domestic and global economic and financial crises between 1973 and 2000 caused severe state revenue constraints and persistent budget imbalances (Andersson *et al.,* 2000; GRZ, 1989; 1979). The government had to rely on seigniorage, domestic and foreign borrowing, mainly non-concessional, and an excessive rundown on export earnings at the country's central bank to increase fiscal space (Andersson *et al.,* 2000: 30). Furthermore, the inability by the country to timeously service foreign public debt induced the accumulation of interest on unserviced government debt in the 1980s (World Bank, 1993). The outcome was a perpetual increase in public debt stock in the 1980s and 1990s, even after new foreign borrowings ceased (World Bank, 1993: 15). For instance, the public debt/GDP ratio was below 44% in 1970, but in 2001, the ratio exceeded 235% (World Bank, 2018a).

By mid-1980s, Zambia was in serious public debt crisis compelling the country to undertake a series of economic and financial reforms. Some of the policy reforms to the economic and public debt crises were well designed, while some were not. On the whole, public debt reforms in Zambia between 1964 and 2017 centred on improving the legal, institutional, and public financial management frameworks of the country; supported by structural economic adjustments. The primary purpose of these policy responses was to stimulate economic growth through increased investment levels and reduced public sector indebtedness and poverty (UNDP, 2016; IMF, 2008b). Nonetheless, economic growth rates remained subdued between 1973 and 2000 due to poor investment response, essentially due to the high investment risks associated with most African States, Zambia included (Chirwa & Odhiambo, 2016; Andersson *et al.,* 2000).

The high levels of government debt in Zambia between 1973 and 2000 encouraged the desirability of massive fiscal amendments to lessen the impact of anaemic economic growth rates and soaring levels of poverty in the country, as well to keep public debt within sustainable limits (World Bank, 2003; McCulloch *et al.,* 2000b). Also, the need for public debt reforms in Zambia during the 1980s and 1990s was inescapable as it had a direct political connotation, especially to the ruling party (IMF, 2008b).

The public debt reforms in Zambia during the period under review consists of two distinct periods – 1964 to 2005 and 2006 to 2017. The first phase, 1964-2005, focused on reforms intended at developing the government securities market, and later on, lessening the government's debt burden, while the second phase, 2006-2017, associated with reforms to promote responsible borrowing and maintenance of public debt stocks within sustainable levels (BOZ, 2015b; GRZ, 2011, 2006b; 2006c; 1989; 1972; 1966).

The major domestic public debt management reforms undertaken by the government of Zambia in the 1990s intended to grow the country's financial and capital markets and promote private sector development. The reforms also targeted restricting rising fiscal deficits by boosting the revenue capacity of the government (World Bank, 2006). These economic and financial reforms included:

(1) the liberalisation of the economy and financial sector, which translated into the liberalisation of interest rates and government securities yield rates;
(2) the introduction of new government securities trading arrangements – that is, the introduction of government bonds and treasury bill auctions, which substituted the old system of trading state securities by tap basis; and the selling of government securities using the electronic book-entry system, which replaced the issuance of certificates;
(3) the implementation of a cash budgeting system in 1993;
(4) the undertaking of tax reforms, for example, the introduction of value-added tax in 1995; and
(5) the revision of the country's foreign exchange laws (World Bank, 2017a; 2006; 1993; 2001a; BOZ, 2007; GRZ, 2006b; Organisation for Economic Co-operation and Development (OECD), 2006; Bigsten & Mugerwa, 2000; McCulloch *et al.,* 2000a; Kapumpa, 1995).

The government securities market in Zambia existed since the time of the colonial government. During this period, the government used debt markets to raise funds by issuing bonds (Kamanga, 2007). After independence in 1964, the new government continued to raise budgetary funds from the government securities markets and introduced treasury bills, in addition to government bonds (Kamanga, 2007; Kapumpa, 1995).

In 1992, the government of Zambia undertook massive economic and financial liberalisation removing controls on both domestic interest rates on deposits and loans and foreign exchange (Kapumpa, 1995). The government also adopted new financial regulatory frameworks, including the inception of the Banking and Financial Services Act (Chapter 387) of the laws of Zambia (Kamanga, 2007). The new act observed new players entering the financial markets, bringing increased competition to the financial sector (Kamanga, 2007). Regarding the auctioning of government securities, treasury bills were first auctioned in January 1993, and bonds in February 1995 (World Bank, 2006). Before the introduction of government securities auction system, both treasury bills and government bonds traded on an *ad hoc* and tap basis (World Bank, 2006).

In 1994, the government securities market was further strengthened by means of the formation of the Lusaka Stock Exchange with technical assistance from the

International Finance Corporation and World Bank (World Bank, 2006). Before the inception of the Lusaka Stock Exchange, government securities and other long-term private issued instruments traded on an over-the-counter basis (World Bank, 2006). The creation of the Lusaka Stock Exchange was part of the government's adherence to the World Bank economic and financial reforms (World Bank, 2006).

On the expenditure side, to contain rising domestic public debt, the government introduced the cash budgeting system in 1993. Each line ministry's expenditure was limited to disbursed government funds only utilising this method (GRZ, 2007). On the government securities side, the government controlled the growth of domestic public debt by managing the introduction of its securities. In 1993, the government of Zambia introduced a new treasury bill tender system called the auction system. This new development in the securities market aimed to increase domestic capital, money and foreign exchange markets, in addition to mopping up excess liquidity (BOZ, 2015b: 10; Kapumpa, 1995). This exercise caused a swift upsurge in nominal interest rates from approximately 60% in September 1992 to over 200% by the end of 1993 (World Bank, 2001a). The liberalisation in the trading of government securities, that is, treasury bills and government bonds, meant that the market forces determined the prices of these securities.

On the legal front, the government in 1995 enacted the Foreign Exchange Control Act leading to the cessation of foreign exchange repressions and strengthening the liberalisation of domestic interest rates (Bigsten & Mugerwa, 2000). Inevitably, the soaring real interest rates between 1991 and 2000, averaging 15.5%, attracted many private investors to the government-issued debt (Bigsten & Mugerwa, 2000).

Apart from financial market liberalisation, the government also reformed its taxation systems, resulting in the replacement of sales tax with value-added tax in July of 1995 (Bigsten & Mugerwa, 2000). The government's motive in introducing value-added tax in 1995 was to reduce inflationary pressures in the economy and enhance the revenue performances of the state by minimising tax evasion (OECD, 2006). In the area of structural and institutional reform, there was particular attention to public expenditure management and control. The focus of the government was to improve expenditure control and enhance the overall efficiency of the public sector. In line with these expenditure restructuring reforms, the government implemented the Integrated

Financial Management Information System (IFMS) in 2000 (IMF & IDA, 2000). Prior to this, the government launched the National Capacity Building Program to improve the capacity of the legislature and judiciary in the proper management of public resources and implementation of economic reforms, deregulation, and privatisation (IMF & IDA, 2000). Regarding the privatisation of state-owned businesses, in the 1990s, the government formed the Zambia Privatisation Agency . The main focus of privatisation by Zambian authorities was to minimise government borrowing destined to subsidise loss-making state entities (IMF & IDA, 2000).

In the post-Highly Indebted Poor Countries (HIPC) period, 2006-2017, domestic public debt reforms focused principally on minimising central government budget imbalances, managing the issuance of government securities and improving public sector financial management. The reforms included: the integration of planning and budgeting processes; introduction of new public expenditures controlling frameworks; adoption of new mechanisms of selling government securities; and amendment of the country's constitution, especially on public finance management and accountability (World Bank, 2017a; GRZ, 2012; Dinh *et al.,* 2002; Copestake & Weston, 2000). For example, in 2006, the government reduced the frequency of auctions for treasury bills from weekly to fortnightly and increased that of government bonds from quarterly to every two months (BOZ, 2006). This new policy directive intended to enhance liquidity management by progressively moving away from issuing shorter-term government securities to issuing longer-term government securities.

As part of the fiscal consolidation exercise, the government in 2014 reintroduced the cash budgeting system to substantially reduce domestic public debt arrears accumulated in recent years (GRZ, 2015a; 2015b). The adopted cash budgeting system intends to continuously lower the government's deficit financing syndrome, with the fiscal deficit-to-GDP ratio targeted to reach 3% by 2020 (GRZ, 2015b). Furthermore, to promote more efficient and sustainable domestic public debt levels, the government in 2015 implemented the Treasury Single Account (TSA) system (GRZ, 2015a). The TSA system is an integrated structure of bank accounts that indicates the current cash resources of the government. The purpose of instituting the TSA system was to boost the government's capability to efficiently and effectively administer public financial resources through refining existing payments processes

and eliminating unwarranted public finance management procedures (GRZ, 2015a; 2015b).

The other domestic public debt reforms in Zambia after 2006 were mostly embedded in the country's constitution – Constitution Number 2 of 2016 (amended) – and other supplementary statutory instruments and acts. In the 2016 national constitution, each stage of the budgeting process, along with the modalities surrounding the issuance of domestic public debt, is guided by specific articles. For instance, the Bank of Zambia had the sole responsibility of issuing government securities and giving financial guidance to the government of Zambia (Zambia Institute for Policy Analysis and Research (ZIPAR), 2015). These new arrangements were to foster public financial discipline and eliminate duplication of roles between the central bank and the Ministry of Finance. Other pieces of legislature included the Public Finance Act of 2004. The Public Finance Act of Zambia prescribes how budget deficits should be financed and provides annual limits of how much the responsible finance minister should contract on behalf of the government (GRZ, 2004).

Apart from domestic public debt reforms, the government of Zambia also instituted numerous foreign public debt restructurings during the review period. Central to the financial and economic reforms before 2006 was the objective of reducing the foreign public debt and stimulating economic growth. For instance, in the period between 1991 and 2006, the government of Zambia concentrated on engaging its major creditors, seeking both public debt relief and rescheduling. The country received considerable foreign public debt relief from the IMF, the World Bank, the African Development Bank, the Paris Club, and other creditors in following this policy direction (Ndikumana & Boyce, 2015; IMF, 2005a; 2000).

Zambia also carried out extensive financial and economic reforms in its exchange rate regime and trade beginning in the 1970s until the 1990s. The reforms included the rapid devaluation of the exchange rate and decontrol of interest rates (Siakalenge, 1994; Seshamani, 1990; Liebenthal, 1978). By the mid-1990s, Zambia had moved to a market-determined exchange rate policy supported by a liberal exchange control regime (Chiwele, 1996). The thrust of the government was to mobilise both domestic and foreign resources to repay the mounting foreign debt arrears. However, some of the instituted policies had secondary adverse effects on the government's budgetary

position, such as inflationary pressures into the economy, thus prompting further foreign borrowing (Seshamani, 1990).

After 2006, the government focused mostly on promoting responsible foreign public borrowing, maintaining sustainable public debt levels, and enhancing efficient public finance management. Therefore, the reforms included the introduction of new foreign public debt management systems, including the introduction of computerised financial management information systems and new institutional frameworks responsible for public debt management (IMF, 2015a; GRZ, 2008; 2007).

In order to qualify for the debt relief initiatives, the government of Zambia began to undertake joint public expenditure reviews with the World Bank in the late 1990s (World Bank, 2001a; Andersson *et al.,* 2000). Complementing these expenditure reviews was the implementation of the Integrated Financial Management Information System (IFMIS) and the Public Expenditure Tracking Surveys (PETS) (World Bank, 2003). The objective of these initiatives was to improve public sector service delivery performance through the monitoring and tracking of foreign public debt commitments and domestic expenditures, thus helping to contain foreign public debt within sustainable levels.

From 2006, the government started to carry out public Debt Sustainability Analyses (DSAs) consistently. The foreign public DSAs were in partnership with the World Bank and the IMF. The principal goal was to monitor the sustainability of foreign public debt levels closely and so help the government to assess its external borrowing needs, and also to evaluate all prospective debt sources (Ministry of Finance (MOF), 2014a). In line with the DSA initiative, the government also implemented the Medium-Term Debt Management Strategy (MTDS) to strengthen fiscal discipline and minimise future liquidity challenges in the post debt relief period (MOF, 2014a; GRZ, 2011). The MTDS is a policy guide that provides a framework for debt contraction, redemption, and refinancing to promote fiscal sustainability and stimulate economic growth (GRZ, 2011).

Similar to domestic public debt management, several pieces of legislation currently guide foreign public debt approval and contraction in the post-HIPC era in Zambia . These include the constitution of Zambia Number 2 of 2016 (amended); the Loans and Guarantees (Authorisation) Act, Chapter 366 of the laws of Zambia; the Bank of

Zambia (Amendment) Act, 2013, in conjunction with the Bank of Zambia Act of 1996, Chapter 360 of the laws of Zambia; the Local Loans Act, Chapter 353 of the laws of Zambia; and the Public Finance Act No. 15 of 2004 of the laws of Zambia (GRZ, 2016; 2012; 2004; African Forum and Network on Debt and Development (AFRODAD), 2005). For example, according to Part VI, Article 63 sub-section two (d) of the Constitution of Zambia No. 2 of 2016, the National Assembly approves foreign public debt before it is contracted (GRZ, 2016). Further, Article 207, sub-section two(a) of the constitution states that the National Assembly specifies and approves the terms and conditions of a loan, grant, or guarantee (GRZ, 2016). The afore-described statutory instruments were enacted and enforced with the prime objective of cautioning the country against external shocks arising from unsustainable foreign borrowings.

The public debt reforms discussed in this section have significantly influenced the structure and composition of Zambia's public debt during the study period. The domestic and foreign debt reforms also contributed to the substantial decrease in the country's debt stocks between 1992 and 2006. Furthermore, the public debt management reforms have also enhanced the study country's economic growth prospects during this time. Presently, the country is among the Southern African countries whose overall public sector debt level is still within acceptable ranges under the World Bank and IMF baseline scenarios (IMF, 2020a; 2017a) (see diagram in Appendix). Besides sound macroeconomic policies and a strong public debt management framework, the country should continue to diversify its economy to expand its export base and strengthen its export structures (IMF, 2017a: 19). Furthermore, it needs to improve on overall public sector project appraisals and continue investing all borrowed funds in high returning investments, especially in the face of a projected rise in non-concessional borrowing and potential external financial and economic shocks (IMF, 2017a).

2.2.3 Public debt and economic growth trends in Zambia

The evolution of public debt in Zambia since the 1960s is a result of the combination of domestic and foreign factors. The domestic factors include public sector policy failures and domestic political developments, while the external factors include the debt relief initiatives as well as the global economic shocks. From one point of view, the internal component of Zambia's public debt arises mostly from treasury bills and

government bonds, infrastructure loans, parastatals debts, and accumulation of arrears on statutory liabilities such as pensions (BOZ; 2013a; 2013b; IMF, 2012b; 2005b; ZIPAR, 2015). Another view is that the foreign public debt component resulted mostly from excessive foreign borrowing on both concessional and non-concessional basis, mainly from multilateral and bilateral financial institutions, private banks, and export credit agencies (World Bank, 2015a; IMF, 2012c; BOZ, 2010). The non-attractiveness of government securities in the 1990s and early 2000, due to high inflation and increased government debt payment defaults, also motivated the government to depend mostly on foreign borrowing (BOZ, 2015b: 10).

In 1964, after attaining political independence, the Zambian government sought to attain economic sovereignty by setting as priority goals industrialisation and economic diversification (United Nations Economic Commission for Africa (UNECA), 2016). In line with these objectives, the country embarked on a series of political, financial, social, and economic reforms to stimulate economic growth through increased investment flows, efficient utilisation of domestic resources, increased export volumes, and finding sustainable ways of reducing domestic and foreign public debts (Fraser & Larmer, 2010). The focus was on massive infrastructure development through extensive expansionary government policies. Despite the enormous public sector investment in the early 1970s, exogenous factors such as the fall in world market prices of unrefined copper, and the global oil shocks of 1973 and 1978, increased the cost of imports and exacerbated macroeconomic instability (Langmead *et al.,* 2006). Also, the massive nationalisation programme of the late 1960s significantly increased government expenditures, thereby worsening the financial position of the state (Andersson *et al.,* 2000).

Consequentially, weakening terms of trade, especially of raw copper and soaring international oil prices, caused extensive BOP problems and unsustainable budget deficits in Zambia, resulting in debt financing (United Nations Conference on Trade and Development (UNCTAD), 2012a; 2012b). In 1973, for instance, Zambia went into a loan contract with the World Bank to caution itself from the oil price shock (UNDP, 2006: 11-12). However, the government erroneously perceived the adverse developments in the domestic and global economy, particularly copper export prices, as temporary. It, therefore, continued to maintain high levels of consumptive and

capital expenditures, opting to finance the resultant budget disparities through local and foreign borrowing (Fraser & Larmer, 2010). Moreover, the various infrastructural development projects undertaken by the government in the mid-1970s, such as the opening up of the Tanzania-Zambia corridor, helped accelerate the depletion of the state's foreign reserves, forcing the government to opt for debt financing instead of scaling down capital costs (UNCTAD, 2011).

Furthermore, the Zambian government's commitment to supporting liberation struggles in the SADC region between 1960 and 1980 contributed to the negative compounding effect on state revenues, leading to incessant reliance on deficit financing (McCulloch *et al.*, 2000a). The public debt burden of Zambia was further exacerbated by the perceived country risk owing to domestic politics, a condition which further adversely affected domestic private investment as well as the inflow of aid and foreign direct investment (Bates & Collier, 1998).

2.2.3.1 Domestic public debt trend in Zambia

In pre- and post-independent Zambia, the mining sector (mainly copper) was the mainspring of employment, foreign exchange earnings and government revenue (Rakner, 2003; Andersson *et al.,* 1989). For this reason, the twin impact of sagging terms of trade and massive de-industrialisation experienced by Zambia from the late 1970s until the late 1990s constrained the central government's revenues from mineral taxation and exports, which declined by 82.6% from ZMK339 million in 1974 to ZMK59 million in 1975, and further to ZMK12 million in 1976 (Organisation for Social Science Research for Southern and Eastern Africa (OSSREA), 2004). During this period, the aggregate contribution of raw copper to export revenues exceeded 90%, while the general manufacturing sector accounted for only 6.9% (World Bank, 2015b).

With reduced government tax revenue and export receipts, especially mineral revenue, the government had to revert to domestic borrowing – resulting in a radical rise of domestic public debt stock in nominal terms, reaching over ZMK566 billion in 2000 (Fagernäs & Roberts, 2004; McCulloch *et al.,* 2000a). The Bank of Zambia started to issue credit on the domestic market to finance recurrent government expenditures, such as the payment of civil service and importation of fuel, as well as funding of work-in-progress capital projects (Fagernäs & Roberts, 2004).

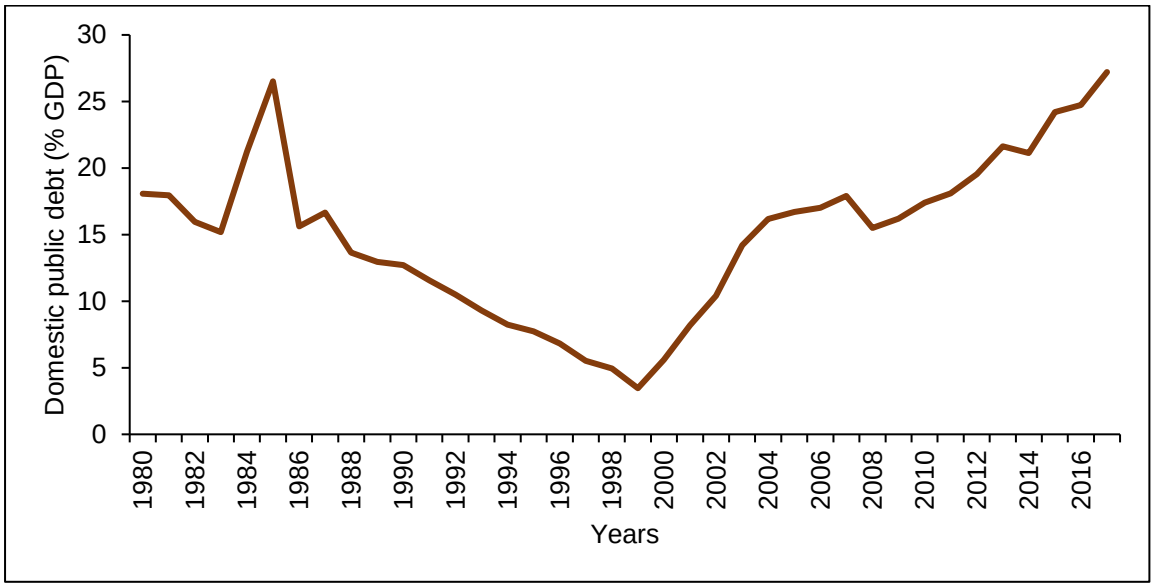
The government's economic reform program of the 1990s brought about massive privatisation of parastatals, liberalisation of the economy and financial markets, removal of price controls, removal of most restrictive labour controls, abolishment of most sectoral subsidies and establishment of numerous deficit financing instruments (Fraser & Larmer, 2010; World Bank, 2006; Hill & McPherson, 2004; Kaunga, 1993). As a result of these new economic structural arrangements, the government was compelled to be liable to the debt burden of the privatised parastatals and compensation of retrenched workers, thus worsening the domestic public debt position of the country (World Bank, 2006; Hill & McPherson, 2004). By the end of 1994, Zambia was in a severe domestic public debt trap, where government expenditures were rising fast, domestic public debt was increasing exponentially, and domestic interest rates were soaring (African Development Bank (AfDB), 2015).

Overall, between 1990 and 2000, Zambia's stock of domestic public debt was rising exponentially due to numerous factors but mainly rooted in the adopted liberalisation policies and the continuous fall in gross government revenues. These factors include, among others:

(1) the rolling-over policy, which dealt with capitalisation of the principal and interest on domestic public debt;
(2) the high-interest rates on government securities, determined by the forces of demand and supply;
(3) the continued unsustainable government budget deficits; and
(4) the high liquidity in the banking sector (MOF, 2004).

However, the persistently high inflation levels experienced in the Zambian economy during this period had the effect of reducing the real value of domestic public debt, since there was no coordination with equal adjustments in domestic nominal interest rates (Central Statistical Office of Zambia, 2014). The repercussion was a continuous fall in the domestic public debt/real GDP ratio between 1983 and 1999. Figure 2.1 shows the general domestic public debt trend in Zambia from 1980 to 2017.

Figure 2.1: Domestic public debt trend in Zambia (1980-2017)



Source: Author's computation from Bank of Zambia (2018a; 2018b)

As revealed in Figure 2.1, the trend of domestic public debt as a proportion of GDP has two phases; 1980 to 1998 and 1999 to 2017. In the first phase, there is a general downward trend in the proportion of domestic public debt-to-GDP, while a rising trend is visible in the second phase. Although Figure 2.1 portrays a declining domestic public debt ratio in the first phase, the nominal value of domestic public debt was on the rise (BOZ, 2010). Persistent government borrowings from the domestic market since 1983 crowded out private sector investment as well as caused high inflation rates in the economy, thus reducing the real value of domestic public debt (IMF, 2008a). According to Atique and Malik (2012), when issuing domestic public debt, the government uses domestic private savings that would otherwise be accessible to the private investors, resulting in increased domestic interest rates which negatively affect private investment. More so, when interest rates are controlled, domestic borrowing causes credit rationing, which consequentially leads to crowding out of private sector investment (Fischer & Easterly, 1990). According to Fischer and Easterly (1990), the situation was worse in Zambia owing to the absence of well-developed non-bank financial institutions such as pension funds and retirement funds to which the government could sell its domestic debt without necessarily crowding out private sector credit.

In the second phase, 1999-2017, an upward trajectory of the domestic public debt-to-GDP ratio is visible in Figure 2.1. This upward trend resulted from an increased new issuance of treasury bills and special government bonds following an extensive restructuring of both the central bank and the Zambia National Commercial Bank (BOZ, 2013b; Kamanga, 2007; World Bank, 2006). In 2003, the Bank of Zambia and the Ministry of Finance started to implement numerous financial and economic structural reforms which helped to reduce the percentage of domestic public debt on GDP from 21% in 2003 to 14% in 2008 – hence the gradual increase in the domestic public debt/GDP ratio between 2003 and 2007 (Kamanga, 2007). On the whole, although the growth in nominal domestic public debt of Zambia in the 1980s was due to accumulated domestic public debt arrears, pension arrears and other forms of compensation payment obligations, the growth in domestic public debt stocks after 2006 was a result of the government's new strategy to finance domestically both recurrent public spending and infrastructure development expenditure (IMF, 2015a).

In Zambia, the highest proportion of domestic public debt was in the banking sector, mainly the Zambia National Commercial Bank (BOZ, 2013b). The domestic public debt composed of marketable securities, that is, treasury bills and government bonds, non-marketable securities, such as the ten-year bond, and other special bonds (like the Kwacha bridge loan), pension arrears, as well as other public liabilities (BOZ, 2013b). Table 2.1 shows the structure of domestic public debt from 1990 to 2017 by the holder.

Table 2.1: Structure of domestic public debt in Zambia (by holder) (1990-2017)

	Debt holder	
	Banking sector (%)	Non-banking sector (%)
1990	87	13
1995	81	19
2000	76	24
2005	64	36
2010	66	34
2011	69	31
2012	72	28
2013	68	32
2014	62	38
2015	59	41
2016	57	43
2017	53	47

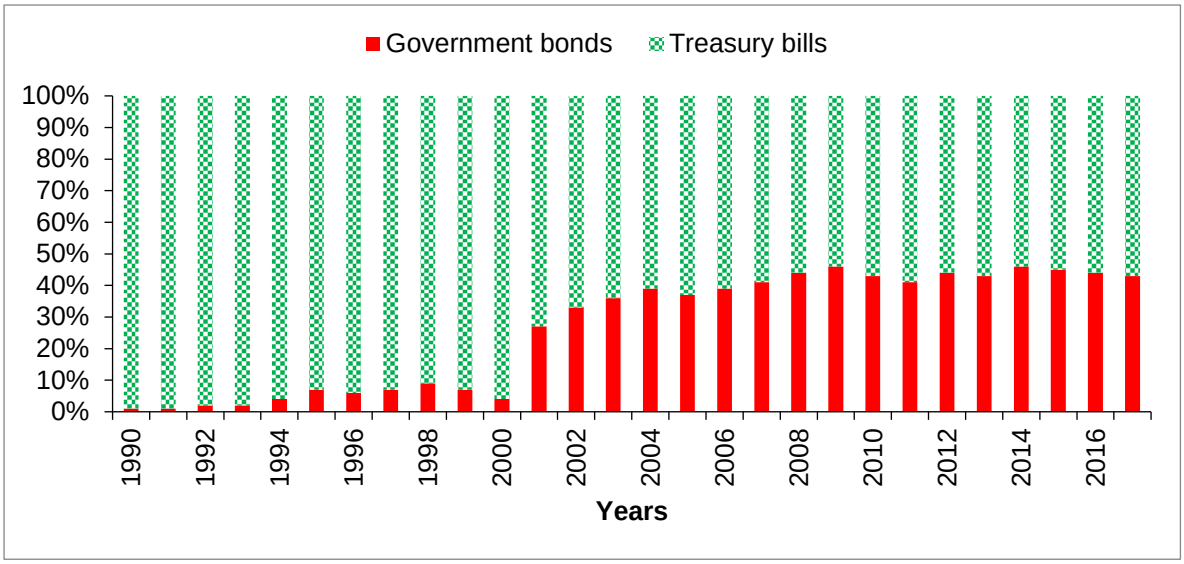
Source: Author's computation from Bank of Zambia (2018a; 2018b)

Table 2.1 shows that the government of Zambia borrowed excessively from the banking system to fund its budget imbalances. The major players in government securities in Zambia were institutional investors like commercial banks, pension funds, and insurance companies (GRZ, 2006a). This was mainly on account of the high returns on government securities due to high yield rates on treasury bills and the regulatory requirement for commercial banks to maintain liquid assets as a percentage of liabilities (World Bank, 2006). Similarly, commercial banks dominated in the holding of government bonds (BOZ, 2018a).

During the period 1990-2000, domestic public debt was largely short-term, and treasury bills were the main borrowing instruments of the government (GRZ, 2006a). Treasury bills had four maturity profiles – 28 days, 91 days, 182 days and 273 days (World Bank, 2006; GRZ, 2006a). However, the introduction of long-term government securities in 2001, in the form of one-year, one-and-half years, two-years, three-years and five-years government bonds, saw the emergence of the non-banking private sector, including foreign investors, increasingly becoming a significant source of demand to the government securities in Zambia (IMF, 2015a; GRZ, 2006a). The increase in the issuance of government securities was due to the need to cover rising government deficits (World Bank, 2018a). Although foreign investors were permitted to buy government securities, the law only required them to do that through authorised

Zambian commercial banks (AFRODAD, 2011). Figure 2.2 provides a general structure of the domestic public debt of Zambia from 1990 to 2017.

Figure 2.2: Domestic public debt structure in Zambia (by instrument) (1990-2017)



Source: Author's computation from BOZ (2018a; 2018b)

Figure 2.2 shows a generally increasing trend in the issuance of long-term government securities, notably from 2001 to 2017. This issuance of long-term government bonds contributed to the expansion and development of the domestic debt market in Zambia, especially after 2001. With increased issuance of government bonds, the Zambian government progressively minimised the roll-over risk associated with short-term debt (IMF, 2017a). However, the active participation of the government on the domestic financial market constrained gross domestic savings accumulation, in addition to pushing up the yield rates of securities (IMF, 2007). For instance, the yield rates for 365 days treasury bills were 36%, 48%, 51.6% and 58.9% in 1996, 2001, 2007 and 2010, respectively (BOZ, 2016).

2.2.3.2 Foreign public debt trend in Zambia

Although domestic public debt increased over the years to supplement the dwindling export receipts, this could not match the import needs and fiscal activities of the country. This forced the government to augment domestic revenues with foreign borrowings in addition to the desire to fulfil pre-independence promises to roll out countrywide developmental projects, especially from the IFIs, Paris Club and other

international multilateral and bilateral creditors (Simson, 1985). As a result, foreign public borrowing grew from the moderately lower levels of US$3.8 million between 1975 and 1984 to over US$7.2 billion in 2004, representing a 187% increase (IMF, 2005a). The period 1970 to 2000 was “foreign debt led” in the sense that Zambia ran a persistent current account deficit and borrowed hugely from the global financial institutions and capital markets to finance the escalating fiscal gap (World Bank, 2018a; Andersson *et al.,* 2000). Table 2.2 highlights the changes in some of the selected foreign public debt variables for Zambia between the periods 1975 to 1991.

Table 2.2: Selected foreign public debt variables in Zambia (1975-1991)

Variable	**1975**	**1980**	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**
Foreign public debt (US$ millions)	1137	3266	4576	5745	6626	6840	6709	7237	7271
Foreign public debt-to-GDP (%)	49	84	203	345	319	188	154	172	190
Foreign public debt-to-exports (%)	129	201	527	775	735	547	470	539	324

Source: Author’s computation from World Bank (2018a)

As depicted in Table 2.2, in the five years from 1975 to 1980, the foreign public debt of Zambia increased by nearly three times from US$1137 million to US$3366 million, respectively (World Bank, 2018a). By 1991, total foreign public debt further increased to US$7271 million, with most debt measurement variables deteriorating to unsustainable levels (IMF, 2003a). Therefore, from 1980 to 1991, Zambia was in severe foreign public debt distress, since the foreign public debt-to-GDP and export ratios were above the recommended IMF and World Bank thresholds of 40% and 200%, respectively (IMF, 2012c). In other words, the economy of Zambia could not generate sufficient financial resources to meet foreign public debt obligations, both principal and accumulated interest. Also evident in Table 2.2 is the fact that a large proportion of export proceeds went towards foreign public debt servicing instead of developmental activities (IMF, 2003a).

By 1992, the foreign public debt of Zambia had reached alarming levels which prompted some creditors, like the Paris Club to cancel part of the debt owed to them by Zambia and reschedule the remaining balance. However, notwithstanding this gesture by the Paris Club, Zambia’s foreign public debt crisis remained in place. In

1996, the IMF and World Bank launched the HIPC initiative targeting developing countries in serious debt challenges (IMF & IDA, 2000). To be accorded foreign public debt relief, recipient countries must accept and adhere to the prescribed HIPC economic structural reforms and conditions. These reforms included privatisation, market-oriented investment policies and trade liberalisation (IMF & IDA, 2000).

Also, the HIPC initiative had baseline measurements of foreign debt sustainability in the form of the public debt-to-exports ratio, public debt-to-reserve ratio, public debt-to-GDP ratio, and public debt-service-to-exports and central government revenue ratios. The IMF and the World Bank's suggestive measure of the impending foreign public debt crisis for the ratios above were, 150%, 250%, 40%, 20% and 30%, respectively (IMF, 2019; IMF & World Bank, 2004; Johnson, 2001). According to these baseline indicative thresholds, a country would qualify for HIPC debt relief initiative only if its net present value of foreign public debt-to-exports ratio exceeded 150%, with a per capita income of less than US$785, and Zambia qualified (IMF, 2005a).

In December 2000, the Bretton Woods institutions agreed that Zambia had met the prescribed conditions in the HIPC initiative and thus reached the Decision Point (IMF & IDA, 2000). In 2000, Zambia's foreign public debt was at least double its GDP (World Bank, 2018a). During the interim period, between decision and completion points, Zambia received foreign public debt cancellation of US$452 million from the IMF, and US$98 million from IDA, AfDB, Organisation of the Petroleum Exporting Countries (OPEC), European Union (EU), and Paris Club creditors (IMF, 2005a).

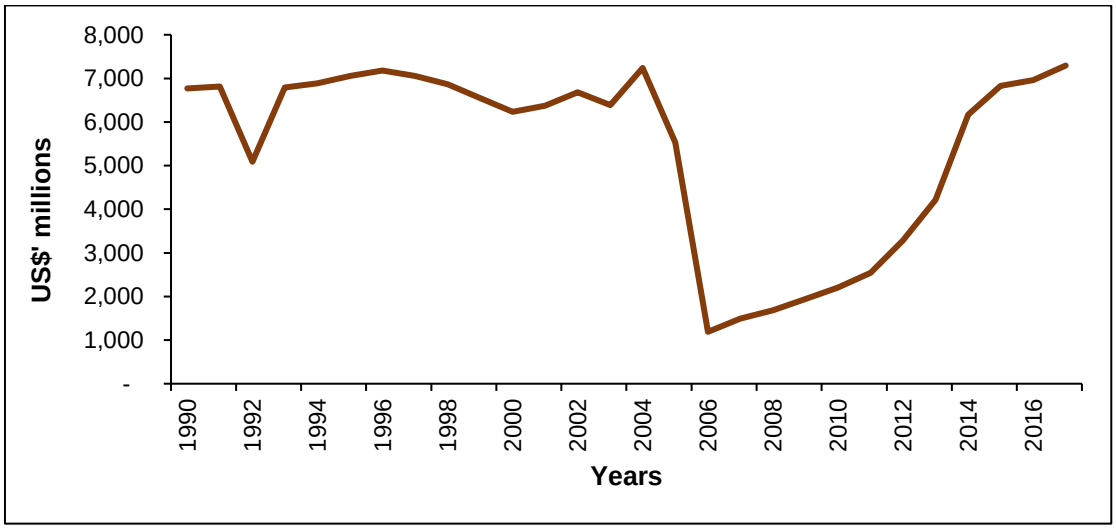
With the accomplishment of the HIPC Completion Point in April 2005, Zambia received remarkable foreign public debt relief from the Group of Eight (G8) countries, Paris Club and other major creditors (GRZ, 2006c). The debt relief was in the form of foreign public debt stock cancellation and rescheduling. A total of US$2.8 billion foreign public debt was cancelled, reducing accumulated foreign public debt from US$7.2 billion in 2004 to US$4.4 billion by December 2005 (GRZ, 2006c).

The foreign public debt burden of Zambia further reduced when the Bretton Woods institutions and AfDB agreed to cancel a significant proportion of the debts owed to them under the Enhanced HIPC initiative and the Multilateral Debt Relief Initiative (MDRI) of 2006 (GRZ, 2006b; MOF, 2006a). The MDRI was a redefined and

developed edition of the HIPC. In January 2006, the IMF wrote off US$581.6 million, representing 97% of the debt owed by Zambia (GRZ, 2008). In the same year, both IDA and AfDB wrote off debts owed to them by Zambia (World Bank, 2014a). As a consequence, the MDRI reduced Zambia's debt by an extra US$3 billion to US$1.3 billion by the end of 2006 (World Bank, 2014a). Furthermore, the World Bank's financial and technical support to Zambia since 2005 helped to ease the country's quest to borrow externally (World Bank, 2014a).

As from 2005, the World Bank has extended to Zambia two budget support credits worth US$50 million (World Bank, 2014a). These forms of non-debt support initiatives are helping the country to reduce the growth in foreign public debt stocks since 2005. The technical support from the World Bank led to the crafting of the Financial Sector Development Plan (FSDP) in 2009 (BOZ, 2017). Figure 2.3 shows the foreign public debt dynamics in Zambia from 1990 to 2017.

Figure 2.3: Foreign public debt trend in Zambia (1990-2017)



Source: Author's computation from World Bank (2018a)

Figure 2.3 portrays two episodes of foreign public debt development in Zambia; episode one is the debt relief period, 1990 to 2006, and episode two the post debt relief period, 2007 to 2017. Episode one is characterised by high levels of foreign public debt averaging US$6.6 billion (World Bank, 2018a). In 1992, the new government embarked on fresh borrowings to sustain its programmes and activities, and also support the structural economic and financial reforms instituted in the country in collaboration with the IMF and World Bank (IMF & IDA, 2000). Furthermore, the

radical rise in interest charges on foreign debt as a proportion of the national income worsened the fiscal and public debt position of this country (IMF & IDA, 2000).

The high levels of foreign public debt in the 1990s, both principal and protracted arrears, impeded economic growth prospects through massive capital flight, depressed public and private sector investments, increased foreign exchange outflows – in the form of foreign public debt repayments – and restricted access to international finance (GRZ, 2006b). The downward spike in foreign public debt between 1992 and 1993 in Figure 2.3 is a result of a US$1.5 billion debt cancellation by the Paris Club, with the remaining government debt balance being rescheduled (IMF, 2005b).

From 1996, Zambia's outstanding foreign debt stock was reduced by successive debt forgiveness from its major creditors, resulting in the portrayed downward trajectory visible in Figure 2.3 between 1996 and 2000. In 2000, Zambia reached the Decision Point resulting in marginal debt cancellation from the World Bank and the IMF (World Bank, 2014a). Despite these minor debt reliefs in 2000 by the Britton Woods institutions, the foreign public debt stock continued to rise, averaging US$6.2 billion, owing to accrued interest arrears and also maturing principal debts (ZIPAR, 2015; BOZ, 2001). Upon reaching the Completion Point in 2005, Zambia received massive public debt cancellation from its major creditors, further reducing the foreign public debt stock to less than US$1.3 billion in 2006 (GRZ, 2006b).

In the second episode, 2006-2017, there is a noticeable exponential rise in foreign public debt stock in Zambia. This swift accumulation in foreign indebtedness during this period is likely to have been the result of a mixture of factors, such as new non-concessional borrowing from international capital markets, the issuance of Eurobonds and syndicated loans on international debt markets, and significant real exchange rate depreciation (World Bank, 2017b). Zambia, like many other African countries, has in recent years been actively borrowing on a non-concessional basis from various international creditors, such as China and other emerging market economies, to reduce its fiscal imbalances and fund public sector developmental projects (IMF, 2017a).

Regarding Eurobonds, Zambia issued the bonds three times since 2012, that is, in 2012, 2014 and 2015 – with the cumulative value amounting to US$3 billion in 2016

(World Bank, 2017b). The country also amassed US$450 million in 2016 through a syndicated loan (World Bank, 2017b). Subsequently, foreign public debt grew from US$2.5 billion (or 8.4% of GDP) in 2011 to US$7.3 billion in 2017 (or 38.5 % of GDP) (GRZ, 2018). The last segment of Figure 2.3 shows that foreign public debt stocks surpassed the levels prior to receiving public debt relief, meaning that from 2015, Zambia was classified as being in public debt distress (IMF, 2017a). Table 2.3 provides a summary of the Bretton Woods institution loans to Zambia between 1970 and 2005.

Table 2.3: Summary of the IMF and the World Bank loans to Zambia (1970-2005)

Year	Loan Description
1973	The World Bank disbursed the requested by the Zambian government following the global oil price shock.
1978	The World Bank, through the International Development Association, extended new loans to Zambia.
1981	The IMF made some loan disbursements to Zambia under the Extended Fund Facility (EFF).
1982	The IMF cancelled the EFF.
1983	The World Bank stopped making new loan and aid disbursements to Zambia.
1984	The World Bank agreed to give Zambia a new loan towards the resuscitation and development of the Copper Sector.
1985	The Bretton Woods institutions made some Structural Adjustment Programme loans disbursements to Zambia.
1987	The Zambian government cancelled all Bretton Woods sponsored reform programmes. The IMF and the World Bank suspends financial aid and loans to Zambia.
1992	The Zambian government clears loan arrears to the World Bank. The IMF started to make some new loan disbursements.
1995	The IMF and Zambian government signed a new loan of US$1.3 billion under the 3-year Enhanced Structural Adjustment Facility (ESAF) and 1-year Structural Adjustment Facility (SAF). Also, in 1995, the World Bank issued new loans to Zambia under the Economic Recovery and Investment Project.
1999	The IMF disburses part of the $350 million loan under the extended ESAF.
2000	Zambia reached the IMF and the World Bank HIPC Decision Point. As a result, Zambia received partial foreign public debt relief.
2004	Through the Poverty Reduction and Growth Facility, the IMF made new loans to Zambia, to the tune of US$320 million.
2005	Zambia reached the IMF/World Bank HIPC Completion Point and received enormous debt relief from the Bretton Woods institutions.

Source: Author's computation from GRZ (2006a; 2006b); IMF (2005a; 2001)

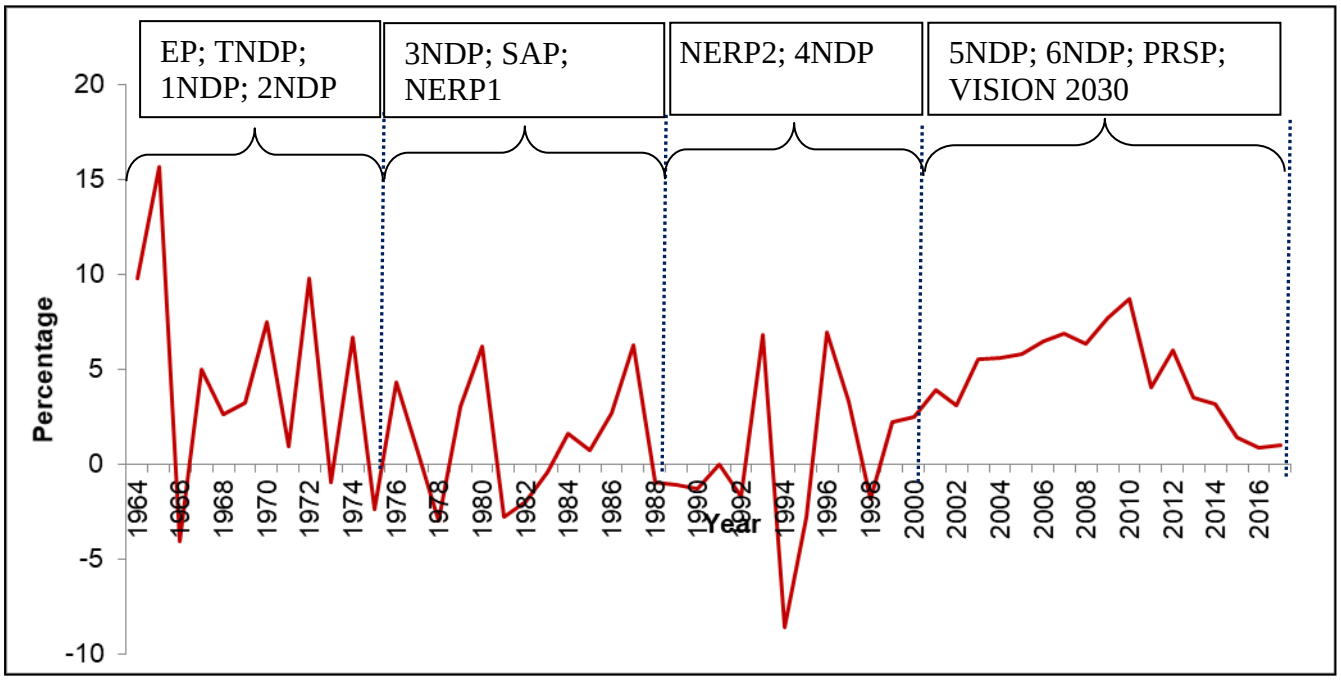
On the economic growth front, Zambia's economic growth dynamics were determined first by command-driven policies from 1964 to 1990 and second by market-oriented policies, from 1991 to 2017. The period 1964 to 1990 was associated with central planning, nationalisation of economic sectors, mainly mines, construction, energy, clothing and textiles, chemicals and manufacturing (Andersson *et al.,* 2000; Saasa, 1987; GRZ, 1966; 1964). According to Chirwa and Odhiambo (2016), the performance

of the Zambian economy during the first phase, 1964 to 1990, can be split into two phases, the golden phase which spans from 1964 to 1974, and the economic hardship phase which stretches from 1975 to 1990.

During the golden period, the Zambian economy grew by an average annual rate of 5.1%, mainly driven by copper exports which fetched high prices on the global market and accounted for more than 80% of the Zambian government's revenue (Chirwa & Odhiambo, 2016; Andersson & Mugerwa, 1989; GRZ; 1966). The average annual GDP per capita during this period was $1589, reaching a record high of $1724 in 1965 (World Bank, 2018a). In contrast to the golden phase, the economic hardship period, 1975-1990 is characterised by (1) severe deterioration in international commodity prices, mainly copper and agricultural output prices; and (2) stern global oil price shocks (World Bank, 2006). A combination of these adverse developments in the global economy negatively impacted economic growth trends in Zambia, and also caused numerous government policy reforms and public policy reversals (GRZ, 2006b). The economic growth rates during the period 1975-1990, were thus moderate, spiking at around 0.1% of GDP – with swings reaching a period low of a negative 8.4% in 1975 and a period high of about 4.1% in 1981 (World Bank, 2018a).

The economic hardship phase was immediately followed by the market-oriented economic growth period, 1991-2017. Beginning in 1991, Zambia embarked on extensive economic structural adjustment reforms which resulted in most state-owned enterprises either privatised or commercialised (IMF & IDA, 2000; Bigsten & Mugerwa, 2000). Despite the economic and financial reforms, the economy grew by an average rate of 0.6% between 1991 and 2000, with per capita income declining from a peak of US$892 in 1994 to US$554 in 2000 (World Bank, 2018a). Figure 2.4 summarises the economic growth trends and economic reforms in Zambia from 1964 to 2017. Economic growth is measured by the annual growth rate of real GDP per capita.

Figure 2.4: Economic reforms and economic growth trends in Zambia (1964-2017)



Source: Author's computation from World Bank (2018a); GRZ (2017b; 2011; 2006b; 1989; 1966)

EP = Emergency Program; *TNDP = Transitional National Development Plan;*
NDP = National Development Plan; *SAP = Structural Adjustment Programme*
NERP = New Economic Recovery Programme *PRSP = Poverty Reduction Strategy Paper*

The trends portrayed in Figure 2.4 indicate that Zambia's economic growth was unstable between 1964 and 1998. The negative economic growth variations between 1964 and 1981 coincided with the fall in global copper prices and growing inefficiencies that characterised most state-owned enterprises (World Bank, 2006; Mudenda, 1984). During this period, 1964-1998, the Zambian government borrowed excessively from both the domestic and foreign capital markets to meet the fiscal gap following the decrease in copper export revenues and increased financial losses of state-owned entities (Andersson *et al.,* 2000).

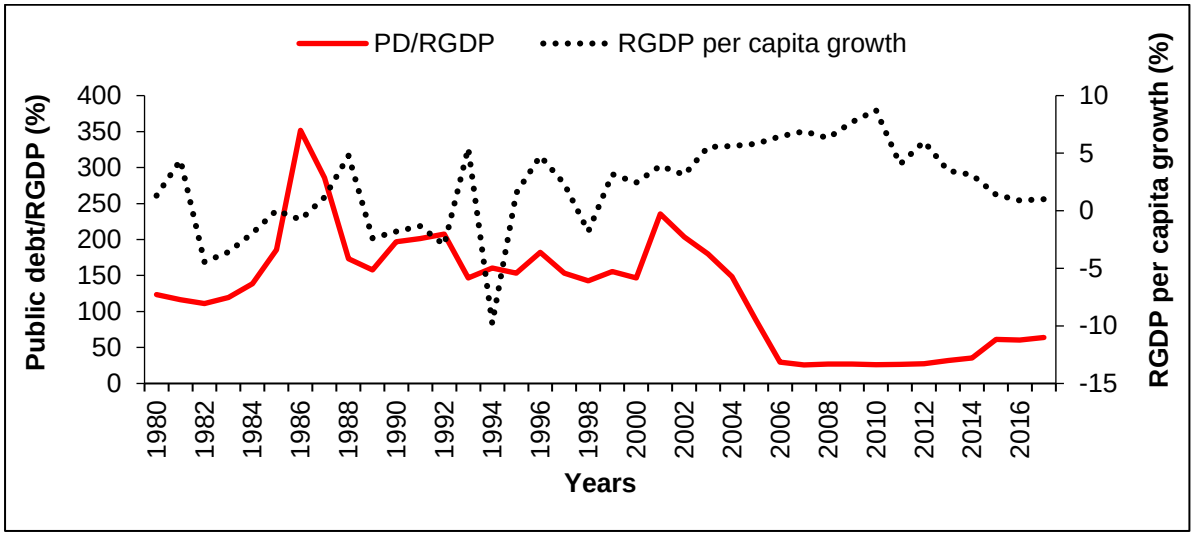
The economic growth rates, however, recovered gradually from the -4.4% recorded in 1982 to a peak of 4.8% in 1988 before falling to a negative 2.4% in 1989 (World Bank, 2018a). The rise and fall pattern of economic growth rates seem to be related to the market reforms adopted for a while and later abandoned for a state-led economic growth model at the end of the 1980s – a model which was also short-lived (Bigsten

& Mugerwa, 2000). In the early 1990s, economic growth rates were erratic, and the economy reached a period low of negative 9.8% in 1994 (World Bank, 2018a).

However, there was an economic rebound from 2001 until 2014 in which average annual economic growth was 5.6% (World Bank, 2018a). For the first time since 1965 when it reached 15.7%, Zambia's economic growth reached 7.6% mark in 2010 owing to increased copper production, high copper prices and a boost in agricultural exports (World Bank, 2018a). The economic growth rates recorded between 2001 and 2014 were higher and more sustainable than those recorded between 1980 and 2000 (World Bank, 2018a). However, the economic growth rate eased in 2015, 2016 and 2017, recording 1.4%, 0.9% and 1.0%, respectively, following poor achievements in the services, extractive and construction industries beginning the end of 2015 (World Bank, 2018a; 2016a). In 2017, the government of Zambia approved its Seventh National Development Plan (2017-2021), with the theme, "Accelerating Development Efforts Towards Vision 2030 Without Leaving Anyone Behind" (GRZ, 2017a). The prime objective of this government policy is to transform the country into an upper-middle-income country by 2030 (MOF, 2006b).

In Figure 2.5, the study presents the trends in public debt and economic growth in Zambia between 1980 and 2017. Public Debt (PD) is expressed as a ratio of real GDP, while economic growth is measured by the annual growth rate of real GDP per capita.

Figure 2.5: Public debt and economic growth trends in Zambia (1980-2017)

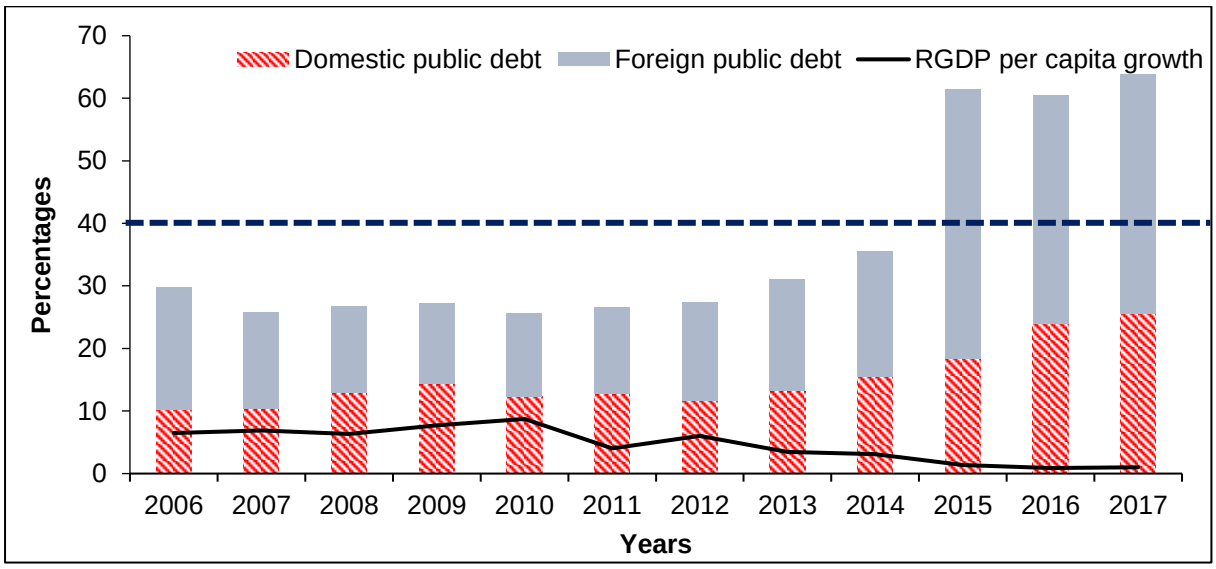


Source: Author's computation from World Bank (2018a)

Public debt dynamics in Zambia, as portrayed in Figure 2.5, has three phases: (1) 1980 to 2004, in which government debt exceeded national output; (2) 2005 to 2014, when public debt levels were below 40% of GDP; and (3) 2015 to 2017, where public debt levels exceeded the World Bank and IMF debt sustainability threshold of 40% of GDP, averaging 59.9% (World Bank, 2018a; IMF, 2017a). The gradual increase in Zambia's public debt after 2010 was due to the priority of the government to transform the country into an upper-middle-income country as stated in the country's Vision 2030 policy document (MOF, 2006b). Figure 2.5 reveals a strong negative correlation between public debt and annual growth rate of real GDP per capita in Zambia. Explicitly, the analysis of Zambia's public debt manifests an upward trend during periods of economic slump and a stable, slowing-down trend during the post public debt crisis period. This analysis is consistent with the proposition that, at least on some level, low real growth could lead to higher debt levels.

Conclusively, the dynamics of public debt during the period under review are reflected in the rapid changes in both domestic and foreign public debt components, especially after the debt relief initiatives. Figure 2.6 presents the public sector debt composition of Zambia in the period after the public debt relief initiatives, expressed as a percentage of real GDP per capita.

Figure 2.6: Domestic, foreign public debt and economic growth in Zambia (2006-2017)



Source: Author's computation from BOZ (2018a; 2018b); World Bank (2018a)

In Figure 2.6, although both components of public debt grew since 2006, the rate of foreign public debt growth accelerated after 2014. From 2014 to 2017, an assortment of poor performances in key economic sectors, such as copper mining and agriculture widened the primary deficits and exacerbated both domestic and foreign public borrowing (IMF, 2017a). The period 2006 to 2017 has two distinct phases, 2006 to 2014, and 2015 to 2017. In the first phase, 2006-2014, public debt levels were sustainable according to the IMF/World Bank sustainability threshold, while in the latter phase, sovereign debt is unsustainably elevated placing the country at a high risk of approaching a condition of public debt overhang (IMF, 2017a).

While foreign public debt was driven up by both new external borrowings and exchange rate depreciation, the domestic counterpart was determined by the intensified issuance of state securities and central bank riding loans (IMF, 2017a). The proportion of domestic public debt to GDP rose from 12.7% in 2011 to 25.6% in 2017 (IMF, 2017a). The rise in domestic public debt after 2011 arose typically from rising issuance of treasury bills, treasury bonds and accumulation of arrears and loan financing from the banking system (IMF, 2017a). The turn towards the domestic debt market by the government in 2008 and 2009 follows the global economic recession and public debt crises that adversely affected most developed economies, including Zambia's prime markets for copper exports and foreign aid.

While the Fifth National Development Plan had prescribed a maximum limit of 0.5% of GDP on domestic public borrowing, the government exceeded it by 2% for several reasons, including a large number of carryover funds, expansionary monetary policy and issuance of long-term government securities (GRZ, 2009). Beginning 2013, as seen in Figure 2.5, there was also a general rise in domestic borrowing in a bid by the government to reduce over-reliance on foreign loans to finance its budget (GRZ, 2015b).

2.2.4 Challenges facing public debt management in Zambia

Public debt dynamics in Zambia are currently confronted with an unstable global economic and financial environment, which present serious challenges for effective public debt management (World Bank, 2016b). According to the World Bank (2016b), some factors that directly affect public debt management in Zambia are weak

economic growth rates in industrialised countries, unpredictable world commodity prices, as well as drastic rises in domestic and foreign interest rates.

In general, public debt management in every country is an essential component within the fiscal strategy, especially when public debt stock, domestic and foreign, is large and growing, leading to issues of sustainability (IMF, 2016a). A sound fiscal strategy is one that reduces the risks associated with contracting substantial public debts and fosters the achievement of sustainable economic growth rates (World Bank, 2015b). Thus, the country's laws and regulations governing public borrowing need to be plainly defined and enforced (IMF, 2016a).

Notwithstanding the existence of several government debt management statutes and strategies, some of the public debt management challenges faced by the government of Zambia are (1) the lack of a comprehensive long-term plan or institutional arrangements to coordinate fiscal and monetary policies; and (2) the absence of public debt analysis methodology to ensure that government debt is kept within sustainable levels, and risks associated with future public borrowing are known and carefully calculated (World Bank, 2019; IMF, 2017a; BOZ, 2015b).

Zambia's current legal and administrative system on public debt is fraught with loose ends, which include duplication of functions and the absence of clear borrowing limits to all government divisions and associated institutions (AFRODAD, 2011). For instance, whereas the General Loan and Stock Act, Chapter 350 of the laws of Zambia empowers the central bank to administer government securities that were publicly issued, this law also allocates the mandate of registering government securities to the national treasury (GRZ, 2012). Also, whereas the law provides the maximum borrowing limit for the central government, it is silent about this issue for local and other sectors of the government, except when requesting guarantees (AFRODAD, 2015). Additionally, according to AFRODAD (2015), currently there are no clear statutes to govern the approval of guarantees from the Ministry of Finance.

There is also the potential for conflict between debt issuance for monetary and fiscal policy objectives. Government domestic debt issuance directly affects the domestic capital market through the establishment of benchmark prices, which also impact the financial sector stability and growth and, hence, affect the value of monetary policy transmission mechanisms (World Bank, 2015b). Therefore, government issuance of

domestic debt can restrain the options open to monetary policy authorities, and vice versa. Even with prescribed limits on domestic public borrowing, the maturity structure of government debt securities can directly affect the shape of the yield curve and thus influence the operations of monetary authorities (World Bank, 2015b).

According to the Bank of Zambia (IMF & IDA, 2000), the absence of a proper government debt management framework, weak fiscal performance, exchange rate instability and high inflationary pressures in the 1980s and 1990s contributed to unsustainable domestic public debt levels. During this period, the government failed to effectively monitor and control the expenditures of its line ministries according to the stipulated public sector financial rules and regulations, leading to huge fiscal deficits (World Bank, 2004a: 3). Consequently, the government had to borrow additional financial resources to finance its budget. Moreover, the domestic market for government securities in Zambia is still narrow, and the banking sector dominates treasury securities – mainly commercial banks (OECD, 2014; 2010). The challenge with this arrangement is that commercial banks should match short-term liability deposits with short-term treasury bills, thus depressing the full development of the government bond market (OECD, 2007; World Bank and IMF, 2001). The dominance of the banking sector in government securities also reflects weakness in the commercial lending operations, particularly to the private sector (OECD, 2007).

Although in 2012 the government issued Eurobonds, which possibly attracted foreign investors to the government securities, there are still challenges associated with the development of more long-term domestic public debt instruments to diversify the market for government securities (IMF, 2014b). Domestic public debt maturity periods of between two and three years make the government extremely susceptible to short-term maturity risks and refinancing vulnerabilities, especially given the volatility of inflation and world interest rates (IMF, 2014c). Also, since the market for government securities is still underdeveloped, it is difficult and costly to introduce tax incentives to promote the demand for treasury bills and government bonds in Zambia (OECD, 2010). While non-resident holders of government bonds are typically low, their presence increases volatility, meaning that Zambia's domestic markets can suffer from exogenous shocks (OECD, 2014).

The other challenge that makes domestic public debt management difficult in Zambia is that local governments (municipal councils) are not involved in the overall national debt management strategy formulation (AFRODAD, 2012). The implication, according to AFRODAD (2012), is that local councils end up making too many financial demands on the central government, leading to continuous fiscal deficits, which ultimately lead to either domestic or foreign public borrowing. This challenge can be alleviated by inclusive policy and strategy making, where local governments are involved in the shaping of national policies that affect their operations. Also, local governments should seek suitable approval from the central government to ensure that their borrowing conforms to the national developmental objectives.

Pertaining to the powers to borrow, the Local Loans Act authorises the president and/or the minister responsible for finance to acquire funds in the domestic financial markets through the issuance of specified government securities, that is, bonds and debentures (GRZ, 2016b; ZIPAR, 2015). The president can issue a warranty without an appropriation act or approval from the parliament (World Bank, 2005: 1). This arrangement makes both government expenditure management and domestic public debt control highly difficulty and unmanageable (World Bank, 2005).

Although Zambia has explicit statutory measures governing the contracting and servicing of foreign public debt, the framework is not always adequately implemented and is poorly harmonised (IMF, 2015a: 9). For example, the Loans and Guarantees Act of the Laws of Zambia is only limited to the contraction, and not reporting, of foreign public debt. Hence, there are no proper foreign public debt management guidelines regarding the types of foreign public debt reports to be produced by either the central bank or the Ministry of Finance (IMF, 2012c). Also, since the President's Office has exclusive control over national foreign debt contraction, the arrangement makes the management of foreign public debt difficult (AFRODAD, 2011: 27).

Furthermore, the management of foreign public debt is constrained by the weak institutional arrangements in the country, resulting in duplication or overlapping of functions between government authorities, especially between the central bank and the Ministry of Finance (AFRODAD, 2011). Other challenges associated with foreign public debt management in Zambia include the absence of clearly set out foreign public borrowing limits to local government authorities and the lack of foreign public

borrowing thresholds, like public debt/GDP ratio, interest paid/ GDP ratio, and interest paid/tax revenue ratio, which are fundamental principles for foreign public debt management (World Bank, 2013). The Zambian government should also establish commitment control rules while empowering the Ministry of Finance to undertake foreign public debt audits in local municipalities – the government's main sources of public guaranteed debt – which are currently non-existent (GRZ, 2011b: 21).

2.3 The dynamics of public debt service in Zambia

2.3.1 The evolution of public debt service in Zambia

Many factors influenced the evolution of public debt stocks and public debt service in Zambia over the years, not limited to the sagging of global copper prices in the mid-1970s until the late 1990s (Bigsten & Mugerwa, 2000; McCulloch *et al.,* 2000a; 2000b). These adverse global economic developments eroded the central government revenues from mineral taxation and commodity exports (McCulloch *et al.,* 2000a; Mudenda, 1984). The swift rise in fiscal deficits, global interest rates on public debt, and rolling over of domestic public debt between 1975 and 1991 made Zambia a highly indebted poor country in sub-Saharan Africa (UNCTAD, 2014; McCulloch *et al.,* 2000a; World Bank, 1993). By the late 1980s, the high stocks of domestic and foreign public debt translated into unsustainable public debt service obligations (World Bank, 2018a).

For this reason, the huge budget outlays towards foreign public debt repayments in Zambia in the 1980s and 1990s were perceived as one of the obstacles to the country's economic growth process and upsurge in poverty levels (World Bank, 2012; 2003). During this period, the government reduced its budgetary allocations on both social services, such as health and education, and productive activities that could have expanded the country's revenue base (IMF, 2007; World Bank, 2004a). The high costs of honouring foreign public debt arrears worsened in the mid-1980s and early 1990s, and the government started to contract new non-concessional debt to offset existing foreign debt and arrears (IMF & IDA, 2000). For instance, in 1990, Zambia spent over 23.5% of its GDP on foreign public debt repayments (UNDP, 2013).

Describing the public debt service trap in most African states in the 1980s and 1990s, including Zambia, the former Tanzanian president, Julius Nyerere, wrote “the constant need to borrow in order to service debt; the constant need to service our debt in order to borrow – we can no longer get out of this vicious circle…Is human development a possibility when so much of Africa’s wealth is channelled into debt servicing?” (SADC, 2000: 6). More so, the high domestic public debt repayments were not transformed into productive uses by the recipients resulting in accelerated economic deterioration during this period (Bigsten & Mugerwa, 2000; World Bank, 1993).

Despite the public debt relief and a stable macroeconomic environment that characterises the Zambian economy between 1999 and 2014, the newly contracted public debts pose a severe threat to sustainable economic growth in future (IMF, 2016a). A significant proportion of government expenditure allocations will by 2020 be directed towards debt service payments when these newly contracted loans begin to mature (IMF, 2016a). For instance, in 2013, 9% of domestic revenues were channelled towards government debt interest payments, and in 2017, this rose to 25% (MOF, 2017).

Overall, the major implications of the high levels of public debt stocks in Zambia between 1973 and 2005 were: (1) huge public debt service commitments, comprising of principal and interest payments; (2) contraction of the country’s capital base through massive capital flight and depressed investment activities; and (3) retarded economic growth rates (MOF, 2014b; Bigsten & Mugerwa, 2000; Andersson *et al.*, 2000). Following the realisation that public debt repayment costs were drawing substantially on scarce financial resources that otherwise could be used for entrepreneurial activities and poverty alleviation purposes, the Zambian government implemented a number of public debt service and economic reforms during the period under study.

2.3.2 Public debt service reforms in Zambia

In Zambia, the rising burden of public debt service and poor economic performance caused a stern reduction in government’s real discretionary spending (World Bank, 2004a). As a consequence, beginning in the 1970s, the government undertook a series of measures and reforms to ease public debt repayments and enhance economic performance. For instance, in 1973, 1976 and 1978, the government

entered into a series of agreements with the IMF and World Bank with the prime objective of seeking public debt relief and rescheduling (Wold Bank, 1993). However, these agreements failed to last because of the government's default on scheduled debt service repayments – following depressed income inflows from mineral taxation and export proceeds (Andersson *et al*., 2000).

In 1980, the government renegotiated for a more orchestrated and coordinated foreign public debt service package under the EFF with the IMF, World Bank and Paris Club (Andersson *et al*., 2000). In 1981, however, the EFF broke down and was replaced with a new set of public debt rescheduling agreements beginning 1983, particularly with the Paris Club (Bigsten & Mugerwa, 2000; World Bank, 1993).

Between 1984 and 1986, most African governments, Zambia included, went into several foreign public debt service agreements with London Club commercial banks, the IMF and World Bank, and several other multilateral and bilateral creditors (Ndikumana & Boyce, 2015; 2003; Elbadawi *et al.,* 1996). In Zambia, in 1986, these agreements were augmented by the introduction of a foreign exchange auction system – the main motive was to rebalance the economy through fiscal adjustments, and restoration of production incentives, especially to the exporting sectors (BOZ, 2012). However, the abrupt depreciation of the exchange rate and sudden economic meltdown of the economy led the government to abandon the foreign exchange auction system and revalue the currency in 1987 (Bigsten & Mugerwa, 2000).

Between 1987 and 1990, the government instituted public expenditure reforms, including setting a 10% limit of government revenue directed towards foreign public debt payments (World Bank, 1993). The government also started to adopt the IMF supported structural economic adjustment reforms. These IMF economic and financial reforms came as a result of Zambia's failure to settle its arrears to the institution (IMF & IDA, 2000).

To resume foreign public debt servicing initiatives to Zambia, struggling with high debt levels, the IMF set up a new facility called the Rights Accumulation Programme (RAP), which stipulates clearance of arrears (Andersson *et al.,* 2000). Within this arrangement, financial support from the donor community to Zambia rose rapidly from 10% of GDP in 1989 to 30% in 1992 (McCulloch *et al.,* 2000a; World Bank, 1992). On attaining the RAP set conditions in 1995, Zambia again qualified for resumed IMF

lending in the form of the Enhanced Structural Adjustment Facility (ESAF). Furthermore, in 1992, the Paris Club wrote off US$1.5 billion worth of debt owed to it by Zambia, under what was termed the “Toronto terms”, leading to a marginal reduction in public debt service (World Bank, 1992).

The period between 1995 and 1999 was characterised by a somewhat broad adherence to the ESAF programme and foreign public debt service conditions set out by the World Bank and IMF (IMF, 2000). In 2000, Zambia reached the HIPC Decision Point and qualified for interim public debt relief from its creditors. In 2005 and 2006, a significant proportion of the country’s foreign public debt was written off by its major creditors, such as the IMF, World Bank, Paris Club, and AfDB, lessening the foreign public debt service burden (GRZ, 2006a; IMF, 2005a; 2000).

Overall, from 2000 to 2005, foreign public debt service reforms were limited, since debt service costs constituted a small proportion of government spending – the debt service payments were limited due to both incapacity and debt relief initiatives extended to the country mostly by the Bretton Wood institutions, African Development Bank and Paris Club (World Bank, 2018a; IMF, 2005a; 2005b). More so, during this period, the statutory reforms on foreign public debt commitments were stipulated in the country’s Public Finance Act of 2004 (GRZ, 2004). In this act, the government specified both the contraction and repayment arrangements of newly contracted foreign public debt (GRZ, 2004).

The domestic public debt service reforms in Zambia consisted of major shifts in fiscal and monetary policies as well as structural economic reforms. The Zambian government, like most sub-Saharan African countries, acquired a large number of state-owned enterprises in the first 20 years of independence (ZIPAR, 2015; Hill & McPherson, 2004). Most of these state-owned enterprises encountered severe viability challenges, in addition to the rising civil service bill – the outcome was a severe deterioration in fiscal balances (Hill & McPherson, 2004; Bigsten & Mugerwa, 2000). The adverse fiscal developments compelled the government to supplement its dwindling revenues through short-term domestic borrowing (Bigsten & Mugerwa, 2000).

By the end of the 1990s, domestic public service costs, emanating from parastatal losses and a huge wage bill, skyrocketed leading to massive public sector reforms

(Bigsten & Mugerwa, 2000; Mudenda, 1984). Through the Public Service Reform Programme, the government restructured most state enterprises, with some being privatised, commercialised or merged (Bigsten & Mugerwa, 2000). After 1991, the government continued to contain its domestic public debt service outlays through financial and economic reforms and money printing. Among the fiscal reforms was the adoption of a cash budgeting system in 1993 (GRZ, 2006a). More so, in a move meant to promote the efficient functioning of the domestic capital markets, and also reduce inflationary pressures, the government in 1993 began to redeem its domestic public debt with the help of an increased level of concessional foreign borrowing (Bigsten & Mugerwa, 2000). The government reintroduced the cash budget system in 2014 in which the expenditure of both government ministries and divisions was supposed to be limited to the disbursed funds (GRZ, 2015b).

2.3.3 Public debt service and economic growth trends in Zambia

The high levels of public and publicly guaranteed debt in Zambia and other African states between the mid-1970s and 2006, brought about substantial implications on the countries' debt servicing obligations and overall negative economic performance (Ndikumana & Boyce, 2015; 2003; Clements *et al.,* 2003). The active participation of the African governments in the domestic capital markets in the early 1990s, in addition to increased foreign borrowing, not only affected domestic interest rates and thus crowded out private investments, but also brought about severe tax reforms to raise revenue for servicing public debts and massive capital flight (Ndikumana & Boyce, 2012; 2003; Clements *et al.,* 2003). Zambia was not an exception.

As public debt increased in Zambia since the 1970s, so did the cost of servicing the government debt (World Bank, 2018a). The country's ability to make consistent foreign debt repayments was constrained by successive world economic crises and plummeting international copper prices, as well as the swift rises in world interest rates (World Bank, 2018a). In the post-HIPC period, the increase in public debt service costs emanated from the drastic increase in the size of tradable government securities and the rise in coupon rates (GRZ, 2015a; 2015b). For instance, the coupon rate increased from 5.4% in 2012 to 8.5% in 2014 and further to 9.0% in 2015 (GRZ, 2017b).

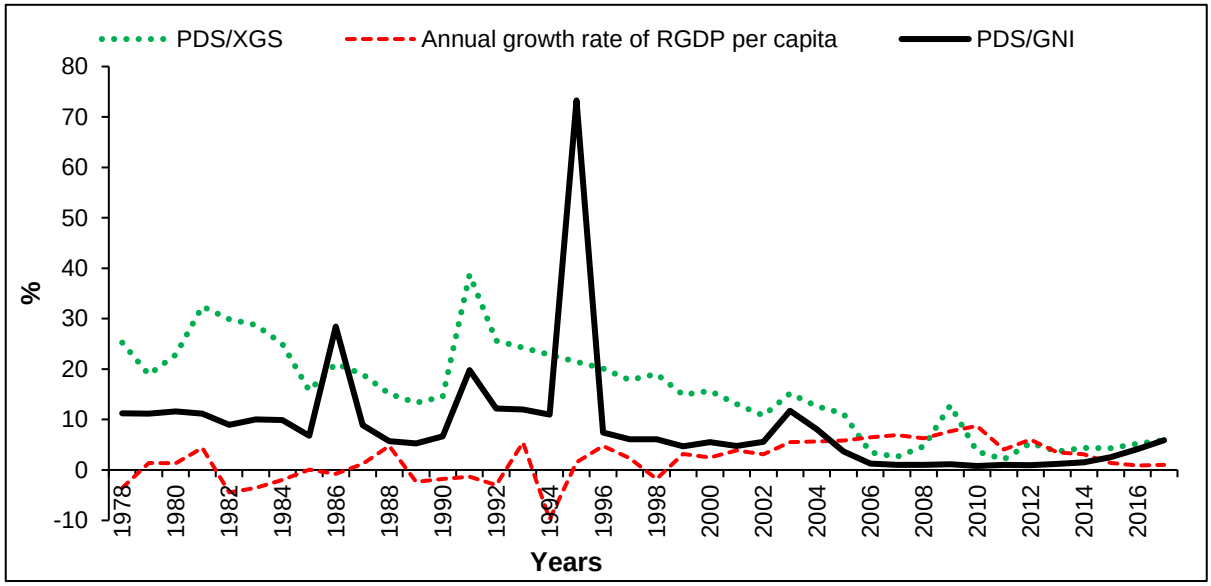
Between 2015 and 2017, the foreign public debt repayment outlays increased by 74.5%, from US$381.7 million in 2015 to US$666.2 million in 2017 (BOZ, 2017). As reported by the International Bank for Reconstruction and Development (2017: 9), public debt service costs in Zambia constituted 47% of the total foreign currency outflows between January and August of 2017. The rising public debt repayment costs in recent years means that the government of Zambia diverts a substantial amount of its tax revenues towards meeting debt service commitments (World Bank, 2019).

Regarding economic growth dynamics in Zambia, upon attaining independence in 1964, the country undertook institutional and economic reforms which can be put into broad categories; command economy (1964-1990) and market-oriented economy (1991-2017). In the early years of independence, the country adopted a socialist economic ideology, which in these stages generated considerable economic growth (GRZ, 1965; 1964). However, the economic success of Zambia was halted by the global economic crisis of 1973 and 1978, which led to the deterioration in the country's terms of trade, particularly in copper and agricultural exports, and to the rise in oil imports (Adam *et al*., 1993a; 1993b). As a result of the economic problems that the Zambian economy experienced during the 1970s and 1980s, the government was compelled to seek financial assistance from the IFIs, with the consequence of high repayment costs beginning in the early 1990s (Andersson *et al.,* 2000).

At this time, the Zambian government endeavoured to stabilise the economy through a number of economic and financial reforms – leading to a market-driven economy. The reforms focused on liberalising the economy, enhancing private sector participation, privatising and commercialising state-owned businesses, eliminating foreign exchange and investment controls, among others (Chirwa & Odhiambo, 2016; GRZ, 2006b; Andersson *et al.,* 2000). Between 2000 to 2017, the macroeconomic drivers performed well, characterised by positive and stable economic growth rates, averaging 4.6% (World Bank, 2018a). These were a result of the high accumulation of domestic and foreign investments and reduced public debt service costs following the debt relief initiatives (GRZ, 2006b).

Figure 2.7 shows the trends in public debt service and economic growth in Zambia for the period 1978 to 2017.

Figure 2.7: Public debt service and economic growth trends in Zambia (1978-2017)



Source: Author's computation from World Bank (2018a)

RGDP = Real Gross Domestic Product *GNI = Gross National Income*
PDS = Total Public Debt Service *XGS = Exports of Goods and Services*

Figure 2.7 shows that the public debt service trends in Zambia can be split into three phases; 1978-2005, 2006-2013, and 2014-2017. In the first phase, 1978-2005, the high public debt service burden of Zambia exceeded the rate of economic growth (World Bank, 2018a). During this period, the public debt service-to-exports of goods and services ratio also declined, suggesting the country's incapacity to pay its debt dues. As Figure 2.7 depicts, between 1978 and 2004, the ratios of public debt service-to-GNI and public debt service-to-exports of goods and services were the worst in the country's history, and so was economic performance (GRZ, 2006b). The noticeable decline in the two ratios between 1986 and 1990 also follows the government's debt service policy that set a ceiling on foreign public debt repayments (World Bank 1993: 60).

The observable spikes of the PDS/GNI and the PDS/XGS ratios in Figure 2.7 between 1991 and 1995 coincided with major structural and political developments in this country and associated with the lowest economic growth rates of the period, that were -2.9% in 1992 and -9.8% in 1994 (World Bank, 2018a). Following the HIPC initiative of 1996, there is a gradual stabilisation and decline of the PDS/GNI and the PDS/XGS

ratios between 1996 and 2001. The decline in public debt service costs after 1996 is also associated with an economic rebound of the Zambian economy, especially, on foreign public debt, providing a boost to public savings and investment, thereby freeing resources for infrastructure and human capital development, and hence, economic growth (World Bank, 2019; IMF, 2014b).

Between 2000 and 2005, Zambia received tremendous foreign public debt relief from most of its creditors, resulting in a saving of $233 million in foreign public debt service obligations (World Bank, 2014a). The collective debt relief effort by Zambia's creditors between 2000 and 2005 increased the country's creditworthiness and widened the government's fiscal space (IMF, 2005b). For instance, foreign public debt as a ratio of exports and GDP averaged 50% and 49% in 2004, respectively, relative to 539% and 172% in 1990 (World Bank, 2018a).

The second phase, 2006-2013, is associated with a very low and stable PDS/GNI ratio. Although Zambia was contracting new debt during this period, such as the issuance of the Eurobonds, the bulk of the debt was long term and had not yet matured (World Bank, 2017b). During this phase, the country was enjoying robust economic growth rates, and stable inflation rates averaged 6.1% and 10.6%, respectively (World Bank, 2018a).

In the last phase, 2014-2017, Figure 2.7 shows that there is a new twist in public debt service ratios, which began trending upwards after 2013. The upward trajectory in government service costs was due to renewed short-term domestic borrowing following a gradual deterioration in international copper prices (United Nations, 2016). According to the IMF debt sustainability analysis, Zambia's risk of foreign public debt service distress changed from low to moderate after 2013 (IMF, 2015a). Generally, phase three provides a futuristic outlook of Zambia's public debt service burden, which should increase with the level of the country's output by 2020 (IMF, 2017a). Table 2.4 shows Zambia's foreign public debt and scheduled debt service payments from 1990 to 1999, while Table 2.5 shows Zambia's foreign public debt and scheduled debt service payments from 2000 to 2015.

Table 2.4: Public debt service in Zambia (1990-1999)

	Foreign public debt (US$ millions)	Foreign public debt service (US$ millions)	Foreign public debt service/ Foreign public debt stock (%)
1990	7,237	647	8.9
1991	7,271	718	9.9
1992	6,971	678	9.7
1993	6,791	522	7.7
1994	6,583	541	8.2
1995	6,859	590	8.6
1996	7,181	453	6.3
1997	6,758	376	5.6
1998	6,862	315	4.6
1999	5,950	386	6.1

Sources: Author's computation from World Bank (2018a)

Table 2.5: Public debt service in Zambia (2000-2015)

	Foreign public debt (US$ millions)	Foreign public debt service (US$ millions)	Foreign public debt service/ Foreign public debt stock (%)
2000	5,831	169	2.9
2001	5,771	158	2.7
2002	6,684	148	2.2
2003	5,286	151	2.9
2004	7,080	211	3.0
2005	4,528	302	6.7
2006	2,513	96	3.8
2007	1,189	121	10.2
2008	1,982	130	6.6
2009	3,638	137	3.8
2010	3,202	135	4.2
2011	3,544	139	3.9
2012	4,281	121	2.8
2013	5,318	101	1.9
2014	6,170	101	1.6
2015	7,805	109	1.4

Sources: Author's computation from World Bank (2018a)

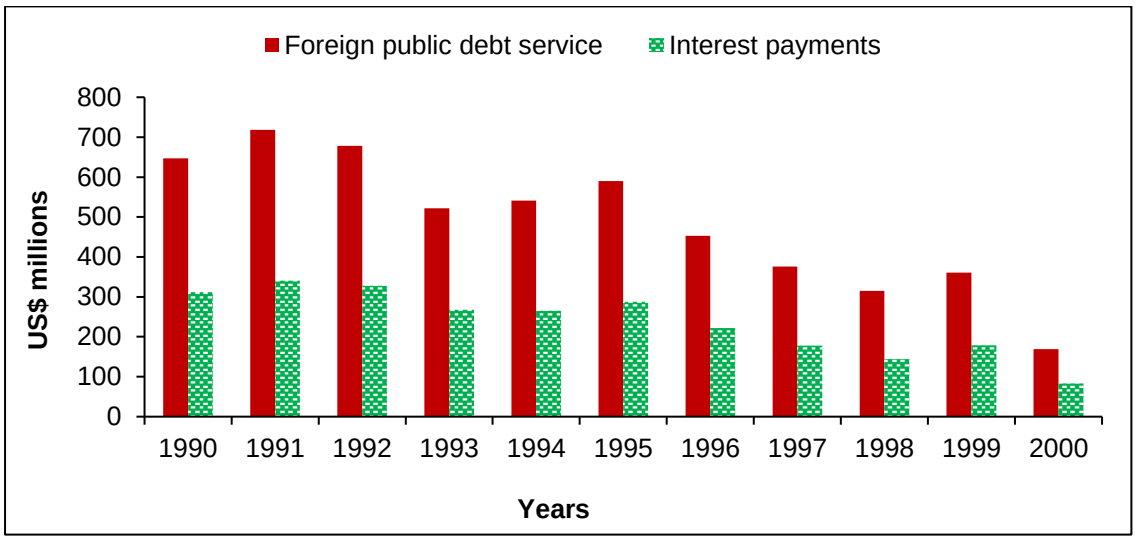
In Table 2.4, foreign public debt service payments were all above US$300 million. Despite being insignificant relative to the existing total foreign public debt stocks, the foreign public debt repayments constituted a significant percentage of the total government revenue (GRZ, 2017a). A period of high public debt service ratio of 9.9% was recorded in 1991, when the country made a once-off payment of US$300 million to the World Bank, thereby clearing all its debt service arrears to the institution (World

Bank, 1993). The government's intention in making this debt repayment was to normalise relations and also subscribe to the World Bank's new sponsored economic reforms (Andersson *et al.,* 2000).

In Table 2.5, the HIPC and MDRI debt relief initiatives reduced the foreign public debt service costs significantly (World Bank, 2018a). This suggests that the public debt relief initiatives generated huge savings for Zambia and contributed to the macroeconomic stability of the Zambian economy, and also the realisation of positive annual economic growth rates since 1999 (See Figure 2.7) (World Bank, 2018a). The reduction in scheduled foreign public debt repayments after 2012 can be attributed to the fact that the newly contracted public debt was partly used to settle existing debts (World Bank, 2019).

Generally, prior to 2005, the average foreign public debt-to-GDP ratio was 154%, meaning that the Zambian economy could not generate sufficient financial resources to pay back its foreign financial dues (AfDB, 2010). The remarkable rise in public debt service burden in Zambia between 1990 and 2000 had been predominantly due to high domestic and foreign interest rates, not merely additional government borrowings (AfDB, 2010). In terms of foreign public debt service payment composition, half of the money went towards interest payments while the balance was channelled towards principal debt repayment (World Bank, 2003; IMF & IDA, 2000). Figure 2.8 shows the trend in public debt interest payments in Zambia during the first phase of public debt relief, 1990-2000.

Figure 2.8: Foreign public debt service and interest payments in Zambia (1990-2000)



Source: Author's computation from World Bank (2018a)

In comparison to the average annual government revenue, the foreign public debt service payments indicated in Figure 2.8 signify a high proportion of the country's budget expenditure. More importantly, however, the public debt service payments shown in Figure 2.8 slightly reduced the foreign public debt crisis in Zambia. The foreign public debt service payment reduction visible in 1993 was due to the US$1.5 billion debt cancellation by the Paris Club (IMF, 2005a). According to the IMF (2005a), between 1990 and 2000 almost 20% of Zambia's GDP was spent on foreign public debt repayments in comparison to the 3% and 2% allocated to education and health sectors, respectively (World Bank, 2004a). This massive disparity in budget allocation between foreign public debt repayments and social sectors suggests the direct adverse impact of foreign public debt payments on economic growth and poverty levels in Zambia during this period (World Bank, 2003). Table 2.6 presents the foreign debt sustainability of Zambia in the post public debt relief era. The higher the ratio, the greater the debt problem.

Table 2.6: Foreign debt sustainability ratios of Zambia (2005-2017)

	Foreign debt/ GDP	Foreign debt/ Exports	Foreign debt/ Government revenue	Foreign debt service/ Exports	Foreign debt service/ Government revenue
Indicative threshold	**40%**	**150%**	**250%**	**20%**	**20%**
2000-2005	86.7	215.6	56.8	11.2	4.0
2006	43.4	56.7	46.8	3.5	3.2
2007	23.8	59.3	48.4	2.6	2.6
2008	21.2	58.2	41.2	3.2	2.1
2009	23.8	82.7	65.6	3.7	2.4
2010	20.4	57.0	57.7	1.9	1.8
2011	24.3	48.1	49.1	2.1	2.2
2012	27.7	42.8	82.3	2.4	6.8
2013	26.9	56.7	94.3	3.7	7.1
2014	28.2	61.8	101.1	4.4	7.3
2015	38.7	54.2	97.6	4.3	6.9
2016	38.6	52.7	87.1	4.1	7.1
2017	38.4	56.3	84.4	4.2	7.4

Source: Author's computation from World Bank (2018a); IMF (2017a)

Table 2.6 indicates that between 2000 and 2005, the average foreign public debt-to-GDP ratio was 154%, meaning that the Zambian economy could not generate sufficient financial resources to pay back its foreign dues (World Bank, 2018a; AfDB, 2010). From Table 2.6, it can be deduced that foreign public debt service ratios decreased from 2006 to 2010, then followed by a steady increase after 2011. In particular, foreign public debt service/exports ratio reduced from 11.2% in 2005 to 1.9% in 2010, implying an increase in fiscal space for the government (IMF, 2017a). With all the public debt sustainability ratios given in Table 2.6 falling to within the indicative thresholds after 2006, Zambia was dropped from the IMF and World Bank list of countries eligible for additional debt relief under the extended MDRI initiative (GRZ, 2007).

In Table 2.6, it is significant to note the fall in the foreign public debt/GDP, foreign public debt service/government revenue and foreign public debt service/exports ratios in 2010. The drop in these ratios suggests the slowing down in economic performance in Zambia's major export destinations and subsequent implementation of austerity in

these economies. Faced with little room to pursue countercyclical interventions, Zambia in 2011 diversified its foreign sources of finance by issuing Eurobonds (ZIPAR, 2015).

2.3.4 Challenges facing public debt service management in Zambia

The challenges facing public debt service management in Zambia since 1964 emanated from the unmanageable accumulation of public debt (domestic and foreign), decrease in value of copper and other agricultural exports and an increase in oil imports (Hill & McPherson, 2004; Bigsten & Mugerwa, 2000; Mugerwa, 1984). Crucial to the challenges of public debt service management in Zambia are the relentless economic crises that characterised the country in the 1970s and 1980s (Bigsten & Mugerwa, 2000). The performances of the productive sectors are consistently weak and more often negative, with occurrences of drought, poor export performance and world recessions aggravating the crisis (Andersson *et al.,* 2000). The collapse of the global commodity market, especially of raw copper and agricultural products, led to heavy foreign and domestic public borrowings, leading to high proportions of public debt service expenditure (UNCTAD, 2014).

The other fundamental cause of Zambia's increasing inability to service its public debts over the years is the restricted productive base which had a negative bearing on the revenue base of the government (IMF, 2007). The deterioration in Zambia's economic performance in the late 1980s, and the high domestic and foreign interest rates worsened the repayment position of the government (GRZ, 2006c). The high domestic nominal interest rates in the 1980s and 1990s caused structural imbalances as the interest cost on outstanding domestic public debt exceeded primary fiscal surpluses (GRZ, 2007). As a result, the government after 1994 was unable to meet the financing of maturing domestic and foreign public debt as well as interest due on its securities (IMF and IDA, 2000).

Debt payments to local-currency denominated public debt were further adversely affected by the country's narrow tax base (Langmead *et al.,* 2006; MOF, 2004). This, in addition to ineffective tax collection strategies, loss-making state-owned enterprises, and massive capital flight, are among the reasons that led to the

accumulation of public debt service arrears in the 1980s and 1990s (Andersson *et al.,* 2000; IMF & IDA, 2000).

Also, since the servicing of foreign currency-denominated public debt requires liquid foreign currency assets, the adverse movements in terms of trade for commodity exports, particularly copper, meant that Zambia could only generate low levels of foreign exchange (IMF, 2009a, 2009b). Thus, foreign public debt service problems in Zambia were mainly influenced by the rising world interest rates and deteriorating terms of trade (World Bank, 2018a; Andersson *et al.,* 2000). The foreign public debt service difficulties and currency mayhem experienced in Zambia between 1987 and 1993 caused sharp increases in public debt repayment defaults and the emergence of non-performing loans in the domestic financial sector (Bigsten & Mugerwa, 2000).

Following the public debt service defaults in the late 1980s, some international creditors, such as the IMF and World Bank, decided to suspend both their financial support and new loan facilities to Zambia (Andersson *et al.,* 2000). This development exacerbated the flow of new capital injection to the country and the inability to honour foreign financial commitments (Andersson *et al.,* 2000). There is a need to broaden the country's revenue base by attracting long-term investments and upgrading the export structure to curtail domestic public debt service challenges (World Bank, 2019; IMF, 2017a). This policy direction will help in diversifying and expanding the export base of the Zambian economy (IMF, 2017a).

2.4 Conclusion

This chapter has discussed the growth trends of public debt, public debt service and economic growth for the Zambian economy from 1964 to 2017. The primary objective was to examine the dynamics of public debt (domestic and foreign), public debt service and economic growth during the sample period. The discussions focused on the major economic and financial policies and reforms that helped to explain the evolution, structure and composition of both public debt stock and public debt service, and the associated economic growth trends in Zambia during the study period. From the discussions in the chapter, Zambia experienced high and rising economic growth rates between 1960 and 1967. The major source of these economic growths was the buoyant demand for copper on the international markets. As a result, government

borrowing, domestic and foreign, reduced as revenues could adequately fund recurrent government expenditures and infrastructure development projects. Public debt repayments on both domestic and foreign public debt was not an issue during this period, 1964-1969 since it constituted only a small proportion of the total government revenues.

However, the copper price bubble in the mid-1970s caused severe deterioration in the country's fiscal balance position, since the Zambian economy was undiversified, relying mainly on the mining sector. The overall effect was chronic macroeconomic instability and perpetual build-up of public debt stocks. These adverse developments compelled the government of Zambia to undertake a series of economic and financial reforms. Some of the public debt reforms include contractual debt agreements with major foreign creditors, such as the IMF, World Bank and Paris Club. The HIPC and MDRI initiatives led to substantial foreign public debt cancellations and debt rescheduling between 1990 and 2006.

The foreign public debt initiatives of 1996-2006 eased the country's public debt distress and reduced foreign public debt service obligations and other debt-related expenses. After 2006, the public debt stock and public debt service indicators of Zambia were within the IMF and World Bank sustainable threshold ranges. However, by the end of 2014, the country's public debt burden rose considerably posing the threat of high repayment obligations by 2020.

Among the discussed public debt service reforms were exchange rate policy changes, economic structural adjustment policies, and engagement of the international creditor community through contractual agreements. The chapter further revealed that the country's major public debt service management challenges emanated from a narrow revenue base, high and volatile interest rates, and exceptionally high government debt stocks during the review period.

CHAPTER THREE

PUBLIC DEBT, PUBLIC DEBT SERVICE AND ECONOMIC GROWTH IN ZIMBABWE

3.1 Introduction

This chapter deals with the dynamics of public debt, public debt service and economic growth in Zimbabwe and includes four major sections. Section 3.2 discusses public debt and economic growth dynamics in Zimbabwe with four sub-sections that discuss the following issues: an overview of the evolution of public debt in Zimbabwe; public debt reforms; trends and challenges facing public debt management in Zimbabwe. Section 3.3 discusses public debt service and economic growth dynamics in Zimbabwe and is further structured into four sub-sections, namely: an overview of the evolution of public debt service in Zimbabwe; public debt service reforms; trends in public debt service and economic growth in Zimbabwe and challenges affecting public debt service management in Zimbabwe. Section 3.4 concludes the chapter.

3.2 The dynamics of public debt in Zimbabwe

3.2.1 The evolution of public debt in Zimbabwe

The dynamics of public debt in Zimbabwe can be traced back to the pre-independence era, the period before 1980 when the country was still under the administration of the Rhodesian government. Between 1960 and 1979, the state financed its expenditures from domestically generated revenues and foreign loans, acquired mostly from private financial institutions and individual governments (Government of Zimbabwe (GoZ), 1982). In 1980, the new GoZ inherited both the domestic and foreign debt of the previous administration (Jones, 2011). More importantly, between 1980 and 1987, it contracted more debt from the domestic and foreign capital markets in a bid to fund increased economic, social and political demands (Mumbengegwi, 2002; GoZ, 1982).

The government in 1980 adopted the “Growth with Equity” policy which focused on addressing the previous economic and social imbalances (GoZ, 1981). However, the implementation of this new policy led to sudden growth in recurrent public

expenditures relative to the central government revenues (Central Statistical Office (CSO), 1990). The resultant fiscal disequilibria encouraged the government to borrow, mostly from the IFIs (Besada, 2011).

In general, the blending of domestic and external factors, mainly policy shocks and adverse developments in the global economy were behind the evolution of public debt in Zimbabwe since 1980 (Besada, 2011; Jenkins & Knight, 2002; Mumbengegwi, 2002). On the one hand, the major domestic factors comprised of excessive public sector expansion, unbudgeted wage increases, huge domestic interest outlays and shrinking tax revenue base (UNDP, 2012; Jones, 2011; GoZ, 2009a). For instance, just like Zambia, numerous state-owned enterprises generated huge contingent liabilities for the central government, in addition to rising employment costs for the public service (GoZ, 2009a; Reserve Bank of Zimbabwe (RBZ), 2003a).

On the other hand, the external factors to public debt accumulation in Zimbabwe in the 1980s and 1990s included sagging terms of trade for commodity exports – especially unprocessed mineral exports, radical falls in foreign direct investment and aid inflows due to economic sanctions, soaring global interest rates, and rising government expenditure (World Bank, 2018a; Mupunga & Le Roux, 2014). Other government expenditure demands emanated from the country's commitment to fulfilling regional peace and security commitments in the Southern African Development Community region – for instance, in Mozambique and the Democratic Republic of Congo (Mupunga & Le Roux, 2014; World Bank, 2004b: 23). Furthermore, the country's fiscal imbalance was aggravated by the severe drought between 1983 and 1985 and 1991 and 1992 (Mupunga & Le Roux, 2014; GoZ, 1992).

The country's public debt overhang emerged in the early 1990s, but the condition worsened in 1999 following increased economic and political crises (IMF, 2001). Between 1999 and 2001, Zimbabwe's major creditors, the World Bank, IMF and AfDB, abandoned their lending schemes to Zimbabwe, citing among other reasons, the violent land reform programme, political instability and failure by the country to repay principal foreign public debts and protracted arrears (Leo & Moss, 2009; Richardson, 2004; IMF, 2001).

Furthermore, between 1998 and 2008, Zimbabwe experienced a severe economic meltdown which culminated into huge capital fight, cancellation of international lines of credit, cessation of foreign aid and grants, public debt repayment default and hence, the build-up of public debt arrears (World Bank, 2018a; GoZ, 2009b; IMF, 2001). By the end of 2000, Zimbabwe was one of the African countries in protracted arrears to the Poverty Reduction and Growth Facility Trust Fund (IMF, 2009c; 2001).

Trapped by the foreign public debt crisis and the imposed financial restrictions by the main IFIs, Zimbabwe changed its foreign policy and began focusing on the Asian market for commodity markets, foreign direct investment and new loans in 2002 (Stiftung, 2004). In the main, therefore, a mixture of public debt default, absence of new concessionary loans and successive economic crises exacerbated the public debt overhang condition of Zimbabwe between 2000 and 2008 (Mupunga & Le Roux, 2014). Presently, Zimbabwe is one of the world's highly indebted countries, characterised by acute fiscal challenges – caused by, among other things, a contracting tax base and an uncertain macroeconomic environment (Mupunga & Le Roux, 2015; 2014).

Additionally, the domestic financial markets in Zimbabwe are still insubstantial, characterised by an undiversified investor base. Similar to Zambia and many other developing countries, financial institutions (mainly commercial banks) are the major investor groups in government securities in Zimbabwe (Macroeconomic and Financial Management Institute of Eastern and Southern Africa (MEFMI), 2013). Furthermore, the presence of unfavourable exchange control regulations in the country forbade foreign investors from actively participating in government-issued domestic debt securities (RBZ, 2016a). Overall, the revenues raised from the domestic debt markets of Zimbabwe could not equalise rising government expenditures, hence prompting excessive foreign borrowing during the period 1980-2017.

3.2.2 Public debt reforms in Zimbabwe

For more than four decades after independence, the Zimbabwean economy has been characterised by a severe deterioration in economic and financial systems, as well as a massive build-up of public debt stock (World Bank, 2018a). The economic meltdown inhibited the functioning of the financial system, and public debt repayment defaults

lowered the country's world credit rating, which eventually increased the cost of foreign finance to the government and private sector (Sibanda & Dubihlela, 2013). The country's public debt overhang led to the suspension or cancellation of several developmental financial support and poverty alleviating programmes and projects by most IFIs (Zimbabwe Economic Policy Analysis and Research Unit (ZEPARU), 2010). The termination of financial support was accompanied by the severe deterioration in foreign exchange reserves at the central bank through increased foreign public debt repayments (RBZ, 2003a).

Cognisant of the rising public debt problem as an obstruction to national development, the GoZ embarked on an extensive reform of the economic and financial systems as part of the Structural Adjustment Programmes (SAPS). The public debt reforms pursued in Zimbabwe have many similarities with those undertaken in Zambia. Like Zambia, Zimbabwe adopted several reforms mostly centred on improving public finance management and minimising government expenditure. Reforms pursued by Zimbabwe in its quest to reduce the public debt problem include: amending central government tax laws; enacting new institutional arrangements, to ensure effective foreign aid and government debt synchronisation; reducing the social safety net; establishing the regulatory and supervisory framework on public debt management practices; reforming state-owned entities; and controlling domestic interest and foreign exchange rates (GoZ, 2015a; ZEPARU, 2013; Ministry of Finance and Economic Development (MOFED), 2014; RBZ, 2007a; Brett, 2005).

The implemented reforms just like in Zambia, aimed to solve the public debt problem by unlocking new finances for economic growth and enhancing private sector entrepreneurial activities (GoZ, 2011; MOFED, 2010). More so, some of the public debt reduction strategies implemented by the Zimbabwean authorities were guided by the need to accomplish the SADC benchmark of a public debt/GDP ratio of less than 60% by 2008 (AFRODAD, 2010).

The implementation of the "Growth with Equity, 1980-1990" policy by the Zimbabwean government aimed to stimulate economic growth while addressing economic, social and political imbalances in the country (Muir-Lereche, 1998). The policy led to a broad expansion of the state's role in the economy, which caused significant fiscal imbalances and an excessive increase in government borrowing requirements

(Muzorewa, 2003). Other financial pressures were springing from the high wage bill, disproportionate subsidies on state entities, along with increasing interest payments on the sovereign domestic debt – further intensifying the deteriorating fiscal position of the government (World Bank, 2004b; IMF, 2001). According to the World Bank (2004b), the continued losses incurred by state-owned businesses diverted credit facilities away from the private sector and kept real interest rates high (World Bank, 2004b). These adverse economic developments in the economy prompted the government to undertake several domestic public debt reforms in the 1990s (UNDP, 2012; Brett, 2005; RBZ, 2003b).

Similar to Zambia, after the adoption of the economic structural adjustment programmes in the early 1990s, the Zimbabwean government first responded to the domestic public debt crisis by privatising and/or commercialising most public enterprises (Besada, 2011; RBZ, 2007a; Brett, 2005). The initiative was envisioned to turn public entities into profitable units. The government in 1991, through the RBZ, established a Parastatal Reorientation Programme (PRP) to privatise some state-owned businesses, such as the Dairibord Zimbabwe Limited (DZL), Cotton Company of Zimbabwe (Cottco) and the Commercial Bank of Zimbabwe (CBZ Holdings). Others commercialised, such as the National Railways of Zimbabwe (NRZ) and the Zimbabwe United Passenger Company (ZUPCO) (RBZ, 2007a). According to the central bank, the PRP policy lessened the budget imbalances and eased the government's domestic borrowing requirements (RBZ, 2007a).

Second, still in 1991, the government instituted extensive revenue reforms through the newly adopted SAPs, recommended by the IMF and World Bank (GoZ, 1991a; 1991b). The purpose of the revenue reforms was to boost the revenue base of the government, thereby limiting the state reliance on seignorage and domestic borrowing (GoZ, 1991a). Although Zimbabwe undertook general tax reforms from as early as 1975, the major ones happened after 1991 following successive economic crises and declining international financial support (Jones, 2011). Sales tax reforms, for instance, began in 1985 with an increase in the general sales tax from 10% to 25% (GoZ; 1996). The government in 1994 amended the sales tax act to allow for instalments in tax payments, and in 1997, further revised it by adding provisions to deal with bad debts (GoZ, 1997). As with Zambia, when the sales tax revenue could not match the expenditure needs of the country, due to massive deindustrialisation, substantial

capital flight and high unemployment rate, the GoZ in 2004 replaced sales tax with Value-Added Tax (VAT) – nine years later compared to Zambia (RBZ, 2005).

Unlike sales tax, VAT is charged on transactions of goods and services, local or imported, rather than directly on income or profit. The adoption of VAT marginally reduced the country's fiscal deficits, and also lessened both national public borrowing levels and inflationary pressures in the economy (GoZ, 2006). Other taxes that were modified and scaled up to boost government revenues in the 1990s were the individual income tax (Pay as You Earn (PAYE)) and the corporate income tax rates (Muzorewa, 2003). In 1998, the GoZ adopted the Final Deductions Systems (FDS) in which PAYE was to be deducted by the employer (Muzorewa, 2003). These tax reforms sought to revamp and strengthen revenue collection by enhancing voluntary compliance, expanding the tax base and minimising corruption-induced revenue leakages.

In 2003, the GoZ further expanded its tax base by introducing the Intermediated Money Transfer Tax (IMT) through the Finance Act number 15 of 2002. However, in 2015, the government broadened the IMT tax by introducing the 5-cent levy on every mobile network transaction (GoZ, 2015a). In the same year, the tax authorities also introduced the 5% turnover tax on tobacco (GoZ, 2015a). Following surging domestic public debts, the government in 2018 modified the IMT tax by initiating the 2% charge on every electronic money transfer above Z$10 (GoZ, 2018a).

Third, the country embarked on extensive institutional reforms to improve on domestic public debt management and also invigorate revenue collections. In 2001, the Department of Taxes and the Department of Customs and Excise merged to form the Zimbabwe Revenue Authority (ZIMRA) (GoZ, 2006). The aim in forming ZIMRA was to strengthen revenue collection, facilitate trade and improve efficiency in revenue administration, thus taming the borrowing needs of the country (GoZ, 2006).

Fourth, after 2001, the domestic public debt reforms focused on the management of government debt maturity profile, through lengthening and introduction of new government debt securities. In 2002, the government also began to actively suppress domestic interest rates (RBZ, 2003a; 2003b). The interest rate policy was complemented by the application of a fixed exchange rate system and an introduction of the exporters' foreign exchange surrender requirement (RBZ, 2016a; 2003b; IMF, 2001). These government initiatives subdued the real value of the domestic public

debt. However, the policies destroyed the private sector impetus to invest and export, thus worsening the economic crisis in the country between 2003 and 2008 (GoZ, 2009b).

In 2014, the government of Zimbabwe introduced new financial market reforms, including the trading of infrastructure bonds in the secondary market (GoZ, 2014). The introduction of the 5-year tenor infrastructure bonds at a fixed interest of 9.5%, not only led to the financial strengthening of the economy but also assisted in changing the public debt composition in the country (GoZ, 2014). The introduction of these long-term debt instruments minimised the rollover risk and also reduced the borrowing costs associated with short-term debt (Infrastructure Development Bank of Zimbabwe (IDBZ), 2016). The government raised US$5 million in 2015, US$15 million in 2016 and US$22 million in 2017 through selling infrastructure bonds on the domestic capital markets (IDBZ, 2016). Presently, government debt instruments are traded on the Zimbabwe Stock Exchange in the same manner as other stocks.

Fifth, the government's domestic borrowing requirement was addressed by carrying out public expenditure reforms. Started in 1999, the government rationalised its safety net, and in 2004, reduced its recurrent spending related to military and civil service (RBZ, 2005; World Bank, 2004b). These cost-cutting measures were, however, short-lived and from 2005 to 2009, it increased its military expenditures and grew its civil service (World Bank, 2016c). According to Karenga and Mutihero (2009), a number of government welfare programmes were either suspended or restructured to increase fiscal space. For instance, student grants and loans were discontinued in 1998 and 2006, respectively, due to government cash flow constraints (Shizha & Kariwo, 2011; GoZ, 2006).

In 2009, the Government of National Unity (GNU) adopted the cash budgeting system to curtail the rising domestic public debt burden (GoZ, 2009c). Just like in the case of Zambia, the cash budgeting system restricted government expenditures to actual revenue collected rather than to the cash flow profile associated with the approved estimates. In this regard, monetary operations were insulated from fiscal operations. Also, to control the growth of domestic public debt, the government announced in the annual national budget the volume of net treasury securities issuance to be conducted

for fiscal policy purposes each year, and how the raised money would be used (GoZ, 2011).

Furthermore, in 2009, the GNU appointed the Commercial Bank of Zimbabwe (CBZ) to be the state's bank following the need to stop the quasi-fiscal activities undertaken by the central bank – which ultimately led to the growth of both domestic and foreign public debt in Zimbabwe from 2003 (GoZ, 2009b). Additionally, the government's economic policy, the Short-Term Emergency Recovery, implemented in early 2009, brought about market-based macroeconomic reforms. This, together with the adoption of the multiple currency system in February 2009, caused the domestic debt market to become inactive (GoZ, 2012). The growth in domestic public debt from 2009 to 2013 was, therefore, moderate. However, the government in 2014 abandoned the cash budgeting system leading to the resurfacing of excessive fiscal deficits, which aggravated domestic public borrowing and a slowdown in economic growth (IMF, 2015b).

Sixth, on the legal front, the public debt reforms in Zimbabwe, mainly foreign public debt, included the institutionalisation and operationalisation of the Debt Management Office, stationed in the Ministry of Finance and Economic Development (GoZ, 2014). The responsibilities of the Debt Office are to undertake effective management of the national debt (domestic and foreign) through (1) public debt database validation and reconciliation with all creditors; (2) consolidation and administration of publicly guaranteed debt; and (3) amendment of the existing Public Finance Management Act [Chapter 22:19] (No. 11 of 2009) in line with effective debt management practices (GoZ, 2015b; 2014).

The Public Finance Management Act (amended) of 2015 further stipulates that the Debt Office shall:

(1) prepare and publish a Medium-Term Debt Management Strategy;
(2) prepare and publish an annual government borrowing plan, which includes a public sector borrowing limit, and participate in the preparation and issuance of government securities calendar in line with the annual borrowing plan of the state;
(3) undertake annual debt sustainability analyses;
(4) prepare reports on the debt of local authorities and public entities; and

(5) assess, monitor and keep track of debt levels of all local authorities (MOFED, 2012).

The amendment of the Public Finance Management Act is a part of the public sector financial reforms designed to achieve sustainable public debt in Zimbabwe. In other related institutional and structural reforms, the government in 2015 managed to combine all diamond companies into one under the name Zimbabwe Consolidated Diamond Corporation, as part of the measures to enhance the transparency of diamond proceeds and accountability (Parliament of Zimbabwe, 2017). However, the progress on structural reforms, especially measures to increase diamond sector transparency, has been very slow.

Seventh, in 2011, the GNU instituted numerous foreign public debt reforms, including the implementation of the Zimbabwe Accelerated Re-engagement Economic Programme (ZAREP). The primary objective of the re-engagement initiative was to seek both public debt arrears clearance and rescheduling from the traditional creditors, that is, the World Bank, the IMF and AfDB, in addition to opening up new financing opportunities (RBZ, 2014; MOFED, 2012). According to the central bank, ZAREP was to promote fiscal sustainability through proper expenditure management, monitoring and wage policy reviews (RBZ, 2014).

The emergence of the Staff Monitored Programme (SMP) between the GoZ and IMF in 2013 is a testimony to the achievement of the re-engagement exercise with traditional creditors (IMF, 2015b). The SMP focused on putting public finances on a sustainable course, enhancing public financial management, facilitating diamond revenue transparency, and restructuring the central bank (IMF, 2014e). In particular, fiscal consolidation efforts aimed to reduce the primary budget deficit and provide a framework for the gradual rebuilding of fiscal buffers and international reserves (IMF, 2014e). From 2013, the IMF continued to provide targeted technical assistance to the Zimbabwean authorities and also monitored progress in the implementation of economic programmes (IMF, 2016b).

In other related foreign public debt reforms, the government also set out a floor limit on both primary budget balance and stock of usable international reserves, as well as a ceiling on the stock of new non-concessional foreign debt contracted or guaranteed

by the central government with an original maturity of one year or more (GoZ, 2015a). These reforms were embedded in the country's Public Debt Management Act of 2015, which seeks to provide a comprehensive framework for public debt management (GoZ, 2015b). In the act, the government commenced the undertaking of financial and compliance audits in 2017 as part of an initiative to monitor and control its debts, domestic and foreign (GoZ, 2015b).

In contrast to Zambia, despite the profound changes in the financial and economic order, Zimbabwe still suffers from high levels of public debt, domestic and foreign. From the previous discussion of public debt reforms, two significant conclusions assisted in achieving sustainable public debt levels in Zimbabwe: (1) increased political determination to pay contracted debts on maturity; and (2) solemn government commitment to adhere to the public debt principles outlined in the Public Finance and Public Debt Management acts.

3.2.3 Public debt and economic growth trends in Zimbabwe

The evolution of Zimbabwe's public sector indebtedness dates back to the pre-political independence period. Between 1975 and 1979, the country borrowed from several financial institutions and other world governments to finance the liberation war (GoZ, 1982). In 1980, the new Zimbabwean government assumed a total of US$700 million worth of debt from the previous Rhodesian government (Jones, 2011). Added to this, the government between 1980 and 1987, contracted new loans from the domestic and foreign capital markets in a bid to fund increased economic, social and political demands (Mumbengegwi, 2002; GoZ, 1982). The prime sources of the new foreign loans were multilateral institutions, mostly the World Bank, AfDB and IMF (Muzorewa, 2003; GoZ, 1982).

3.2.3.1 Domestic public debt trend in Zimbabwe

Much like Zambia and many other developing countries, in the first decade of independence, Zimbabwe has relied extensively on foreign finance for the BOP and budgetary support, and less on domestic credit markets to fund its expansionary fiscal projects (Muzorewa, 2003). The country's domestic debt markets were still narrow,

making the proportion of domestic public debt comparatively small relative to foreign public debt in the 1980s and 1990s (World Bank, 2018a; RBZ, 2018a).

A combination of rising levels of government spending in the early years of independence – originating mostly from increased political demands, high public sector investments (such as infrastructure development), numerous social welfare programmes and an expanding civil service – as well as rising international financial constraints, forced the GoZ to fund its budget shortfalls through seigniorage and increased issuance of government debt securities. The domestic financial markets were limited to treasury bills of 30 days, 60 days, 91 days and 364 days, while medium-term domestic public debt instruments were mainly two-year government bonds (Mupunga & Le Roux, 2014).

The domestic public debt position of Zimbabwe further deteriorated in 1999 when the government defaulted on its international financial dues, compelling it to make a swift turn to the domestic debt market for budget financing (Rehbein, 2012; IMF, 2005c; RBZ, 2003a). As a result of the foreign public debt defaults, the country suffered from both a credit-rating degeneration – due to the country's high-risk profile, which led to restrained access to new foreign finances, and the deterioration of economic relations with major creditors (Gono, 2008; GoZ, 2006).

Fundamentally, the evolution of Zimbabwe's domestic public debt over the period from 1985 to 2002 can be split into two: (1) from 1985 to 1994, and (2) from 1995 to 2002. In the first episode, although Zimbabwe suffered from unrelenting fiscal deficits, the average government domestic debt was low, averaging Z$6.5 billion annually (RBZ, 2018a). However, in the second episode, 1995 to 2002, a multiplicity of factors caused government expenditures to soar, which then culminated into exponential growth in domestic public debt. These factors include the 2001/02 drought, high domestic interest rates averaging 35.2% per annum between 1995 and 2002, unbudgeted Z$5 billion gratuities paid to the war veterans in 1997, state participation in SADC diplomatic peace missions (such as the state involvement in the Democratic Republic of Congo civil war in 1997), the fast-track land reform exercise of 1999 and the El Niño flood disaster of 2000, among others (World Bank, 2018a; 2004b; Besada, 2011; Leo & Moss, 2009).

During this second phase, also, 1995-2002, the international community, particularly, the Bretton Woods institutions, withdrew their financial support to the structural reform programmes as well as the fiscus (Leo & Moss, 2009). The outcome was increased reliance on domestic public debt and a rundown on foreign exchange reserves at the central bank (Mupunga & Le Roux, 2014). The persisted lack of foreign fiscal support implied that the country had to depend greatly on internal borrowings to meet budget demand. For this and other reasons, the country's domestic public debt stock rose from Z$2.8 billion in 1985 to Z$107 billion in 1998, and Z$2.2 trillion in 2002, and to more than Z$21.2 trillion in 2008 (Gono, 2008). The growth in domestic public debt could be attributed to the rise in issuance of treasury bills following a reduction in corporate tax payments (RBZ, 2008).

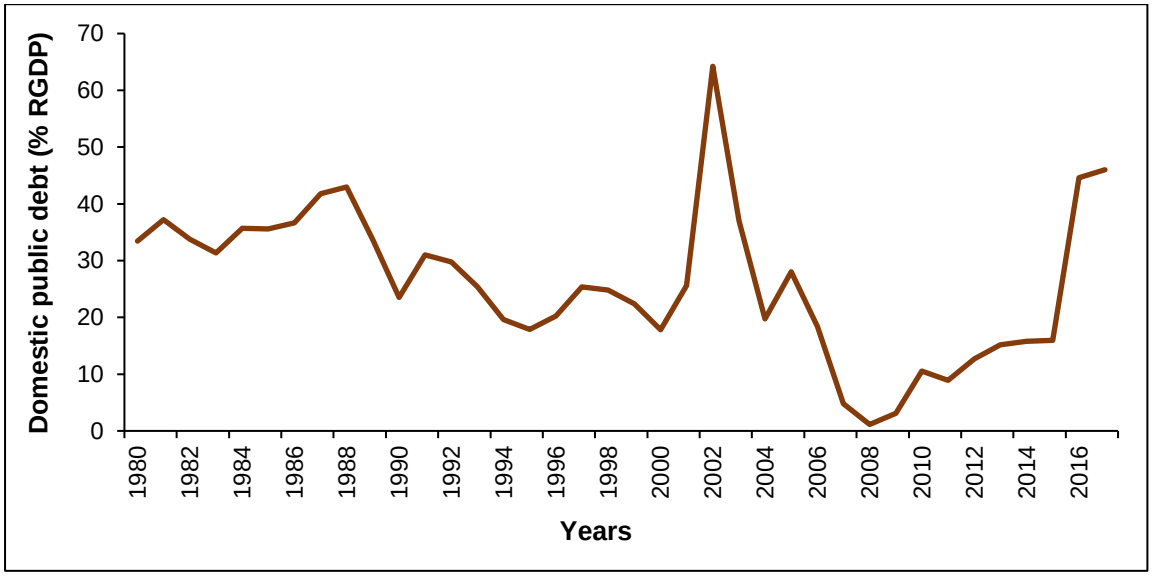
In February 2009, the government introduced the multicurrency system and adopted a cash budgeting system, a mixture of which kept domestic public debt to within insignificant amounts, mostly between 2009 and 2010 (GoZ, 2011). In 2011, the government assumed the central bank debt, worth US$176 million, hence the birth of domestic public debt in the multicurrency system (GoZ, 2011). The RBZ contracted domestic debt of US$1.5 billion mainly through its quasi-fiscal activities embarked on before 2008 (MOFED, 2010). During the period 2000 to 2008, the RBZ rolled out several facilities including, among others, the Basic Commodity Supply Side Intervention Facility (BACOSSI), Productive Sector Facility (PSF), Operation Maguta, Agriculture Sector Productivity Enhancement Facility (ASPEF) and Parastatal and Local Authorities Reorientation Programme (PLARP) (RBZ, 2007b). These facilities were partly financed by funds obtained from depositors' foreign currency accounts and new foreign loans (GoZ, 2009c). Unfortunately, the central bank failed to pay back the funds, as well as its dues to gold dealers, resulting in the birth of RBZ debt (MOFED, 2010).

In October of 2012, the government resumed the issuance of government securities, both treasury bills and government bonds, and by the end of 2012, government securities worth US$69 million had been sold (GoZ, 2014). In the same fiscal year, the government also guaranteed the issuance of US$30 million infrastructure development bonds to the Zimbabwe Electricity and Transmission Distribution Company (ZETDC) pre-paid electricity meter project, further adding to the national domestic debt stock (GoZ, 2018a).

In line with the government's assumption of the RBZ debt, the government issued in March and April 2014 debt instruments worth US$146 million to partially pay RBZ debts (IMF, 2014e). In December 2014, the total domestic public debt rose to US$1.7 billion, and US$7.2 billion as at end of December 2017 (GoZ, 2018b).

Overall, the growth in domestic public debt in post-2013 reflects the growth in the issuance of government securities. The domestic market for the newly issued treasury bills and bonds was financial institutions (RBZ, 2018a). Treasury bonds were issued in categories of 3-, 4- and five-year periods (RBZ, 2018a). Figure 3.1 presents the general domestic public debt trend in Zimbabwe for the period 1980 to 2017.

Figure 3.1: Domestic public debt trend in Zimbabwe (1980-2017)



Source: Author's computation from RBZ (2018a)

Figure 3.1 depicts a scenario in which the ratio of domestic public debt to Real Gross Domestic Product (RGDP) increased from 1980 to 1988, followed by a sharp decline between 1989 and 1990. The abrupt decline in the ratio between 1989 and 1990 follows the high inflationary pressures in the economy, which reduced the real value of domestic public debt (GoZ, 1991a). In 1991, the central government domestic public debt was 30% of GDP, and the government paid 9.8% of its revenues on nominal interest, while inflation was 23% (World Bank, 2004a: 4).

Despite the rise in public borrowing from the domestic capital markets between 1991 and 1999, the domestic public debt/RGDP ratio generally remained stable. Even with

a stable domestic public debt, the financial liberalisation and tax reductions policies instituted by the government between 1991 and 2002 turned out to be fiscally costly and led to a domestic public debt trap in Zimbabwe. Rising interest payments squeezed public spending on social services, while high real interest rates stifled private sector growth (World Bank, 2004b). In 1996, domestic public debt was 25.4% of GDP, and the real interest rate was 8% on domestic public debt, while the interest bill rose to 9% of GDP (World Bank, 2004b).

Other factors that intensified the fiscal deficit between 1991 and 1999 were the government's hesitation in following through with civil service and public enterprise reform, and the 1992 drought which demanded increased public spending at the same time that tax revenues were declining (World Bank, 2004b). However, the quasi-fiscal activities by the central bank between 1998 and 2008, like the funding and distribution of agricultural equipment and inputs, and purchase and distribution of food items, caused substantial changes in the monetary and fiscal policy stances of the country which then culminated in the rise in domestic public debt in absolute terms (Muzorewa, 2003).

The active participation of the state in the domestic capital markets was pronounced between 2002 and 2008. In 2002, inflation in Zimbabwe was still below 50% per annum (CSO, 2005). The rise in domestic public debt vis-à-vis the growth in GDP catapulted the domestic public debt/RGDP in this particular year, hence the noticeable spike in 2002 (CSO, 2005). However, the hyperinflationary environment that characterised Zimbabwe between 2003 and 2008, owing to excessive printing of money by the central bank, had a reducing effect on the monetary value of domestic government debt (Gono, 2008). Thus, the proportion of domestic public debt to GDP declined radically from 64.2% in 2001 to nearly zero in 2008, which essentially meant reduced domestic repayment obligation (GoZ, 2009b). In 2008, the government securities were no longer tradable, and the domestic debt market ceased to operate.

Figure 3.1 also shows that the domestic public debt/RGDP ratio was trending upwards in the multicurrency era. The upward path follows the assumption of the RBZ debt by the government and the increased issuance of treasury bills and government bonds (GoZ, 2013). After 2014, the domestic public debt/RGDP ratio increased exponentially, signifying an increase in domestic public borrowing after the GNU period. Domestic

public debt rose from US$1.9 million in 2015 to US$7.2 million in 2017 (GoZ, 2018a). The increase in domestic debt financing emanated mostly from government expenditures on harmonised country elections in 2013, employment cost overruns, amounting to 3.2% of GDP and poor economic performance after 2014 (GoZ, 2018a; IMF, 2014e).

More so, despite some stern measures taken by the government to cover the costs of the political process in 2013 and 2014, revenue collections deteriorated markedly towards the end of 2013, much lower than budgeted leading to the new issuance of government securities to fund the budget (GoZ, 2014). Also, the accumulation of new arrears to service providers added to the observable rise in the domestic public debt to GDP ratio in Figure 3.1 after 2013 (RBZ, 2015).

3.2.3.2 Foreign public debt trend in Zimbabwe

Unlike domestic public debt which became so pronounced in the 1990s, the foreign public debt of Zimbabwe manifested itself in the early 1980s. A combination of excessive public spending amid available government revenues led to the rise in foreign public borrowing requirements (Richardson, 2004). With limited fiscal space mostly between 1988 and 1991, the government reverted to offshore finances, mainly from the IFIs to fund its economic reforms (IMF, 2001). In 1991, the World Bank and the IMF agreed to assist Zimbabwe financially on condition that the country adopted structural adjustment reforms in the form of the Economic Structural Adjustment Programme (ESAP) and Zimbabwe Programme for Economic and Social Transformation (ZIMPREST) (Richardson, 2004; GoZ, 1998). The resultant new borrowings made substantial changes to the size, structure and composition of Zimbabwe's foreign public debt stock.

Part of the structural adjustment loans from the Bretton Wood institutions was for the repayment of previous public debt, principal amounts and accumulated interest arrears, and the revival of the economy (Jones, 2011). The conditions of the Bretton Wood institutions loans were that:

(1) government spending is reduced by over 40%;
(2) trade is liberalised;

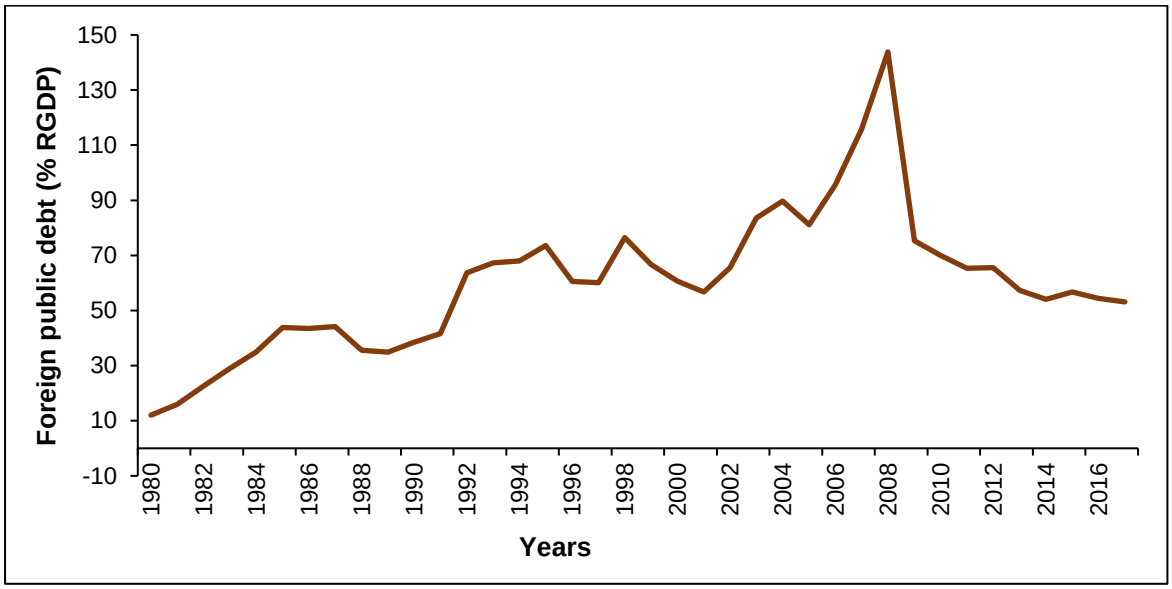
(3) commodity prices and interest rates are de-controlled; and that
(4) the economy is private sector driven (Muzorewa, 2003; IMF, 2001).

According to Jones (2011), approximately US$750 million of Zimbabwe's foreign public debt came directly from economic structural adjustment loans by the World Bank, AfDB and IMF. Unfortunately, however, the newly adopted economic reforms and new financial injections did not transform the economy into realising sound economic growth rates as expected. By the end of 1997, the economy stagnated and subsequently entered into a severe recession, which exacerbated the foreign public debt position of the country (World Bank, 2018a).

With mounting foreign public indebtedness and persistent economic contraction, the government in 1996 abandoned the IMF funded structural reforms, and implemented the ZIMPREST policy in 1996 (GoZ, 1998; 1996). This move by the government, together with protracted foreign public debt repayment default, led to the isolation of the country from the international community in 1997 (IMF, 2003b). This separation from the global economy, in addition to the fast track land reform exercise and active involvement in regional wars, restricted the various forms of aid flows resulting in the build-up of foreign public debt arrears to the multilateral and bilateral creditors (Leo & Moss, 2009). For instance, BOP support, budget support, donor funds and grants were suspended by the IFIs as well as European governments in 1999 (Leo & Moss, 2009).

Trapped by the foreign public debt overhang and the imposed ban on new borrowings by its traditional creditors, Zimbabwe changed its foreign policy and began focusing on the Asian market for commodity markets, foreign direct investment and new loans. Through the Look East Policy, Zimbabwe amassed new foreign loans from the Chinese government and Kuwait Fund to fund its quasi-fiscal activities up to the end of 2008 (AFRODAD, 2015). Figure 3.2 tracks the foreign public debt dynamics in Zimbabwe from 1980 to 2017.

Figure 3.2: Foreign public debt trend in Zimbabwe (1980-2017)



Source: Author's computation from World Bank (2018a)

As Figure 3.2 shows, the foreign public debt/RGDP ratio in Zimbabwe rose from 1980, reaching its period peak of 143.8% in 2008 (World Bank, 2018a). This noticeable rise on this ratio was due to several factors, and not limited to the piling up of foreign public debt arrears due to the contraction of the domestic economy and increase in non-concessional foreign loans (World Bank, 2018a; Gono, 2008; Mumbengegwi, 2002; GoZ, 1982).

The high foreign public indebtedness between 1990 and 2009 adversely affected the private sector in that it could not easily access new and low-cost offshore capital finances and inexpensive credit terms, thus leading to an accelerated economic contraction in Zimbabwe (World Bank, 2018a, IMF, 2017b; MOFED, 2010). The noticeable slump in foreign public debt/RGDP ratio between 1998 and 2001 in Figure 3.2 can be a result of the decline in international borrowing following the suspension of the country's borrowing rights by the IMF and World Bank, and the unwillingness of other creditors to extend new debt (IMF, 2001). After that, the rise in foreign public debt stock resulted mainly from the accumulation of interest on foreign debt arrears (World Bank, 2018a).

In 2004, Zimbabwe made a payment of US$181 million towards the IMF General Resources Account arrears – hence the noticeable spike downwards in this particular

year (IMF, 2010a). The payment of these arrears by Zimbabwe was in response to an IMF Board of Directors' resolution to expel the country from the institution (IMF, 2010a). In February 2009, Zimbabwe dollarised its economy, which ushered in macroeconomic stability and positive economic growth. During the GNU period, 2009 to 2013, the economy rebounded with average growth rates of 9.8% per year (World Bank, 2018a). Between 2009 to 2013, there were frantic efforts to rebuild international creditworthiness to enhance new avenues for foreign borrowing (GoZ, 2014). However, the high interests on foreign public debt arrears kept the foreign public debt stocks substantively high (IMF, 2017b).

Between 2012 and 2014, increased foreign borrowing stemmed from meagre inflows of non-debt financial flows, for instance, foreign direct investment, which remained subdued due to inconsistent government policies on investment, especially the indigenisation policy (Nyarota *et al.,* 2015). Since 2014, the country has been contracting non-concessional debt, mostly from China, to finance its fiscal activities and current account transactions, a scenario worsening the country's foreign indebtedness (IMF, 2017b). For instance, the contraction of new non-concessional loans of US$319 million and US$28.6 million from China Exim-bank and India Exim-bank in 2013, respectively, contributed to the growth in foreign public debt in that particular year (IMF, 2014e). Furthermore, the non-payment of imported products and services from the region by the government, such as electricity from Eskom in South Africa, added to the growing foreign public debt in Zimbabwe since 2014 (GoZ, 2018a; 2018b).

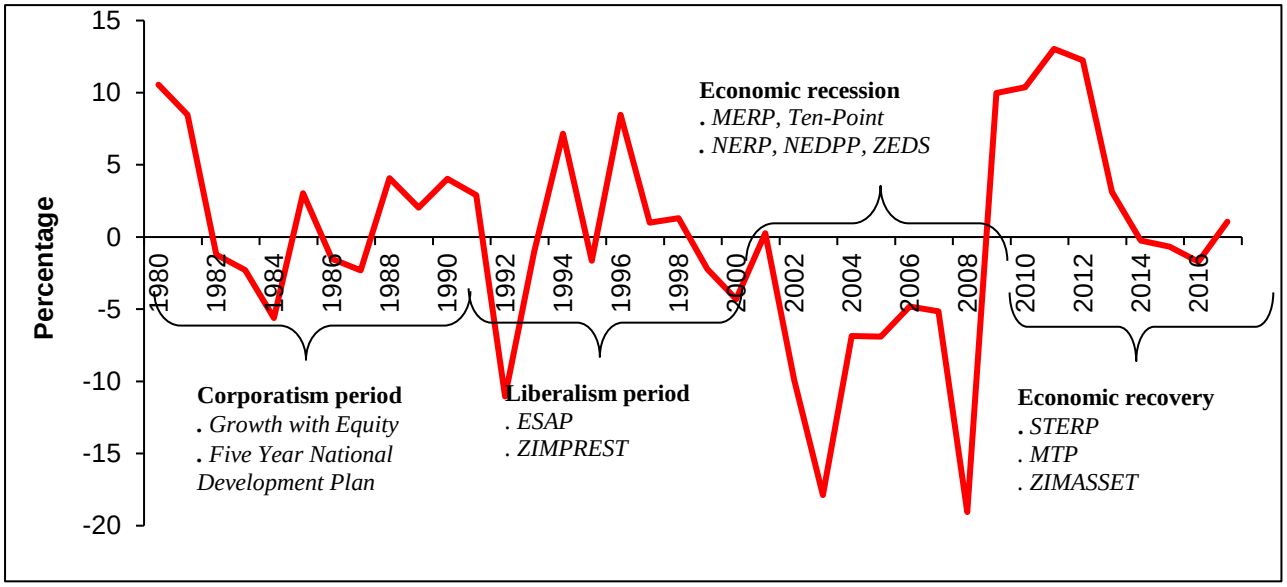
By the end of 2017, the country's foreign public debt was estimated at 53.1% of GDP (World Bank, 2018a). Generally, a combination of the continual international economic and financial isolation and absence of sound political initiatives to resuscitate the economy culminated into a continued deterioration in the BOP and heavy reliance on non-concessional foreign borrowing in recent years (GoZ, 2018b; IMF, 2017b).

From the economic growth front, the economy of Zimbabwe evolved from global seclusion in the 1970s to a more centralised state-controlled system in the 1980s, and later a free-market type of system in the 1990s. The performance of the economy and associated economic growth reforms have six distinct periods: the pre-independence period (1965-1979); the corporatism period (1980-1990); the liberalism period (1991-

1999); the economic recession period (2000-2008); the economic recovery period (2009-2013); and the economic stagnation and recession period (2014-2017).

In the pre-independence period, economic growth was largely driven by policies that promoted self-sufficiency since the Unilateral Declaration of Independence (UDI) government was under economic and political sanctions from the British government, the Commonwealth and United Nations (AfDB, 2012; GoZ, 1982). The focus of the government was on import-substitution industrialisation (GoZ, 1982). During this era, the government established strong backwards and forwards linkages between manufacturing, agricultural and mining industries to meet the country's industrial and welfare needs. Consequentially, between 1961 and 1972, and between 1973 and 1979, the economy grew by an average of 6.9% and 0.2%, respectively (GoZ, 1981). Figure 3.3 traces the various economic reforms and the economic growth trends in Zimbabwe between 1980 and 2017. Economic growth is measured by the annual growth rate of real GDP per capita.

Figure 3.3: Economic reforms and economic growth trends in Zimbabwe (1980-2017)



Source: Author's computation from World Bank (2018a); GoZ (2013; 1991; 1982; 1981)

ESAP = *Economic Structural Adjustment Programme*
MERP = *Millennium Economic Recovery Programme*
MTP = *Medium-Term Policy*
NEDPP = *National Economic Development Priority Programme*
NERP = *National Economic Revival Programme*
STERP = *Short-Term Emergency Recovery Programme*

ZEDS = Zimbabwe Economic Development Strategy
ZIMASSET = Zimbabwe Agenda for Sustainable Socio-Economic Transformation
ZIMPREST = Zimbabwe Programme for Economic and Social Transformation

In the first decade of independence, 1980-1990, the economic policies in Zimbabwe promoted state-led corporatism as well as structural functionalism. The three major policies crafted and implemented during this period were the Growth with Equity of 1981, the Three-Year Transitional National Development Plan of 1982 to 1985, and the Five-Year National Development Plan of 1986 to 1990 (Brett, 2005; GoZ, 1981, 1991a; 1991b). Through the Parastatals Commission, the Growth with Equity policy brought about the formation of many parastatals as well as major labour reforms (GoZ, 1982). The oscillating growth rates that characterise the corporatism period, averaging 1.7%, depict an unstable domestic and external economic environment, a condition which contributed to a series of structural adjustment policies beginning 1991.

The economic decline in the early 1990s, coupled with increasing poverty levels among the general populace, compelled the government to abandon its domestically crafted policies in favour of the IMF supported SAPs in 1991. The two major adjustment policies adopted during the 1991 to 1999 period were ESAP (1991-1995) and ZIMPREST (1996-2000) (Brett, 2005; GoZ, 1998; 1991a; 1991b). These two policies promoted increasingly rapid market-oriented reforms. According to the World Bank, the economy of Zimbabwe shrunk by an average of 0.7% between 1991 and 1995, with a period low negative 11% recorded in 1992 (World Bank, 2018a). By the end of 1996, the economy was suffering from deindustrialisation, which in 1998 degenerated into severe economic recession, forcing the government to abandon the ZIMPREST policy prematurely (Richardson, 2004).

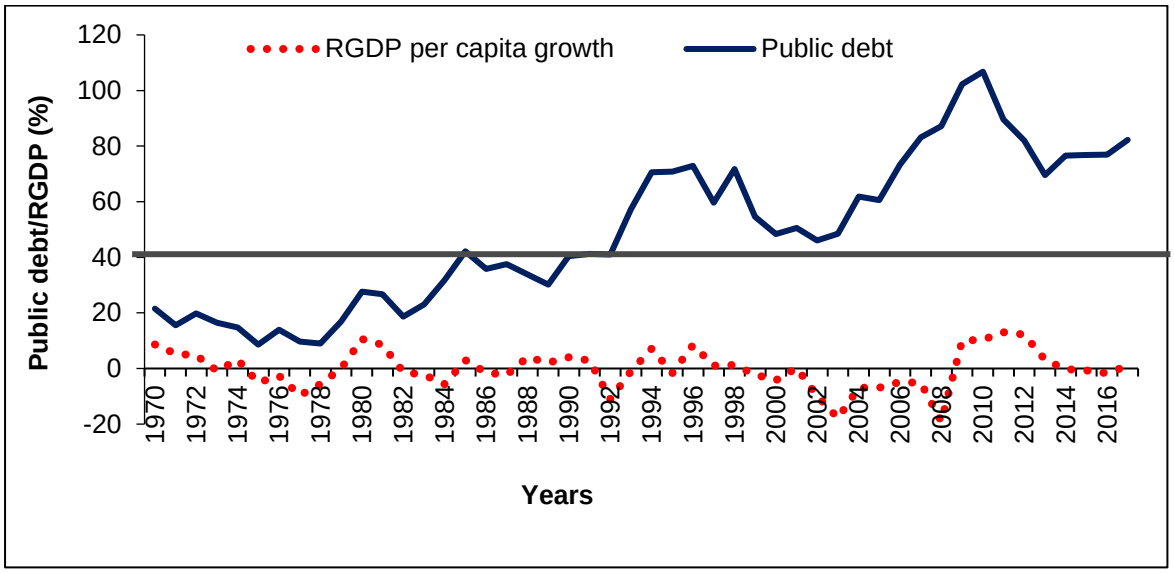
Figure 3.3 further shows that from 1998 to 2008, Zimbabwe recorded the worst consecutive annual economic growth rates, averaging negative 7.7% (World Bank, 2018a). The AfDB described this period as “the lost decade”, where the country experienced severe droughts, huge capital outflows and massive company closures, among other problems (AfDB, 2012). During the period 1998-2008, the GoZ instituted a number of economic policies, mostly hinged on resuscitating the economy through enhanced agricultural sector production. These policies included the Millennium Economic Recovery Programme (MERP), the National Economic Development Priority Programme (NEDPP), the National Economic Revival Programme (NERP)

and the Zimbabwe Economic Development Strategy (ZEDS). Despite the implementation of a multiplicity of economic policies, the performance of the economy remained subdued, characterised by the contraction in the manufacturing sector and poor performance in the agricultural sector (World Bank, 2018a; MOFED, 2010).

Following the adoption of the multicurrency system in 2009, the country experienced an economic rebound which was, however, short-lived, lasting only to 2013. Between 2009 and 2013, the country's average annual economic growth rate was 9.8%, recording a period high of 13% in 2011 (World Bank, 2018a). During this period, the government implemented a series of short- and medium-term policies to stimulate economic growth. These policies included the Short-Term Emergency Recovery Programme I and II and the Medium-Term Policy (GoZ, 2011; 2010). With the expiry of the GNU in 2013, the government implemented the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIMASSET) policy, which continued to guide government activities until 2018. Nevertheless, most policy initiatives in the ZIMASSET policy were never implemented due to increased public sector financial indiscipline and lack of political will (IMF, 2017c). The economy was characterised with a severe deterioration in fiscal balance, cash shortages, rising domestic public debt and falling terms of trade for commodity exports, among other challenges (IMF, 2017b; 2017c; MOFED, 2014).

Figure 3.4 presents the trends in public debt and economic growth in Zimbabwe between 1980 and 2017. Public debt is expressed as a percentage of RGDP, while economic growth by the annual growth rate of real GDP per capita.

Figure 3.4: Public debt and economic growth trends in Zimbabwe (1980-2017)



Source: Author's computation from World Bank (2018a)

Figure 3.4 shows an upward trajectory of public debt to RGDP ratio from 1980 to 2017, distinctly classified into two segments: 1980-1991 and 1992-2017. In the first segment, the ratio of public debt to real GDP steadily grew but remained within the IMF threshold of 40%. During this period, 1980-1991, a mixture of exogenous and endogenous factors – such as the post-war reconstruction initiatives, the increased social welfare expenditures, the civil war of the 1980s, the rising world interest rates, and the droughts in 1982 and 1985 – caused a noticeable growth in public sector indebtedness (Muzorewa, 2003; Mumbengegwi, 2002; GoZ, 1982). The period is also associated with rapid fluctuations in economic growth rate, although the average period growth rate remained positive, averaging 1.9% (World Bank, 2018a).

In the second segment, 1992-2017, public debt grew swiftly, although it partially stabilised between 1995 and 1999. Despite the poor economic performance, the country made some partial debt repayments to the IMF and World Bank in 2000 and 2001, leading to the fall in public debt to real GDP ratio, as seen in Figure 3.4 (RBZ, 2003b). Generally, between 1997 and 2008, the country underwent massive deterioration in fiscal and current account balances, and the cessation of cheap lines of credit from the international community (IMF, 2009c). Characterising this period is the sharp increase in public debt, mostly from penalty charges arising from foreign payment arrears, together with new short-term non-concessionary credit facilities

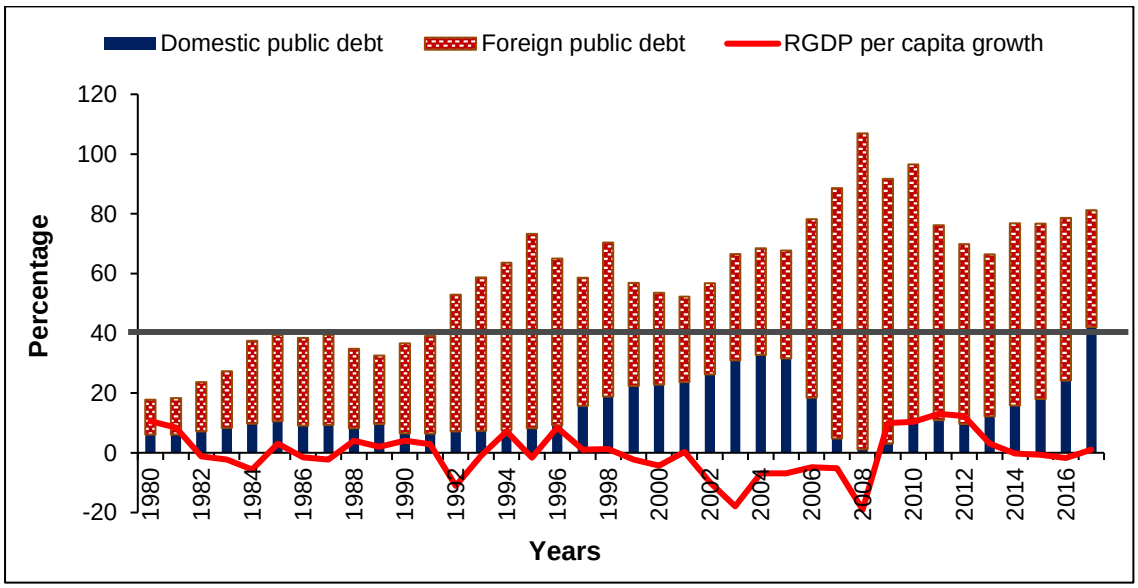
contracted by the RBZ in the absence of sound official development support from the international donor community (RBZ, 2014; MOFED, 2010).

The economic rebound from 2009 to 2012 in Figure 3.4 is concomitant with the plunge in public debt to real GDP ratio, reflecting an improvement in the government's ability to repay its loans. During this period, the country started to make paltry debt repayments, mostly to the IMF, in an effort to increase the prospects of opening up new lines of credit (RBZ, 2015). Also, the adoption of the multicurrency system in 2009 reduced the domestic public debt component (MOFED, 2010). The stern liquidity challenges created by the multicurrency system made it impossible for the government to meaningfully borrow domestically, resulting in depressed volumes of domestic public debt between 2009 and 2013 (IMF, 2014e).

From 2013 to 2017, public debt retook an upward trajectory. Although the country was making constant payments towards its IMF debt arrears, the growth in foreign public debt arrears from other creditors, such as the AfDB, World Bank and European Investment Bank outpaced this reduction (GoZ, 2018b). Also, between 2013 and 2017, there is a noticeable economic growth slowdown arising mostly from foreign currency supply and allocation problems, exchange rate misalignment, and high inflationary pressures in the economy (GoZ, 2018b; IMF, 2017b; 2017c). As a result, the government increased its issuance of treasury bills and government bonds, further subjecting the country to a high public debt maturity risk position (RBZ, 2018b: 30; IMF, 2017c).

Overall, an inspection of Figure 3.4 shows that from 1992 to 2017, Zimbabwe was strictly under severe public debt burden springing from both domestic and foreign public debt. Figure 3.5 presents the public debt composition of Zimbabwe from 1980 to 2017, expressed as a ratio of real GDP per capita.

Figure 3.5: Domestic, foreign public debt and economic growth in Zimbabwe (1980-2017)



Source: Author's computation from RBZ (2018a); World Bank (2018a)

Figure 3.5 shows that from 1980 to 1996, there was a gradual increase in foreign public debt, while domestic public debt remained low. However, between 1996 and 2004 there is a noticeably rapid shift to domestic debt from foreign debt – a move perhaps necessitated by the drying up of official developmental finance by traditional creditors, particularly the IMF and World Bank (GoZ, 2009b). After the government's fast-track land redistribution programme in 2000, financial and economic sanctions were implemented against the country (Richardson, 2004). The sanctions restricted the government's borrowing sources to the local capital markets and the Asian community, hence the rise in domestic debt component from 1999, as shown in Figure 3.5 (Stiftung, 2004). The share of domestic public debt in total public debt, however, decreased abruptly after 2005 due to escalating inflation, which eroded the real monetary value of all government securities and bank balances (Gono, 2008).

The noticeable sudden rise in domestic public debt beginning 2012, in Figure 3.5, is associated with both the assumption of the central bank debt by the government and increased issuance of government securities (GoZ, 2018b). Of the US$2.1 billion government securities issued in 2016, only US$356.3 million (representing 17%) financed the budget deficit while the remaining US$1.7 billion (representing 83%) went towards repayment of outstanding debts, mostly to the IMF (GoZ, 2018a). The

increased domestic borrowing by the government exacerbated liquidity shortages in the country's economy between 2014 and 2017 (GoZ, 2018b; IMF, 2017b).

3.2.4 Challenges facing public debt management in Zimbabwe

Similar to Zambia and other Southern African countries, in Zimbabwe, the problem of government debt management is attributable to poor fiscal and monetary policies resulting in unsustainable levels of public debt or intermittent financial needs (IMF, 2014e: 2). Among the harsh causes of public debt crises in Zimbabwe in the 1980s and 1990s was the weak government debt management policies, undeveloped domestic debt markets, weak institutional and legal public debt management frameworks, lack of proper public revenue transparency and accountability, as well as weak government loan contraction processes (AFRODAD, 2010; GoZ, 2010). Central also to the accumulation of government debt over the years is the absence of clear statutes that govern guaranteed debt of state-owned enterprises, other government agencies, and privately-owned companies (ZEPARU, 2010: 12). According to the African Network on Debt and Development (2010), despite having specific legal requirements governing domestic and foreign public debt contracting in Zimbabwe, the framework is not always adequately implemented and followed. In consequence, the legal requirements for public debt transparency and disclosure in Zimbabwe were limited.

Proper government debt management in Zimbabwe was difficult in the 1980s and 1990s due to the nonexistence of a semi-autonomous authority responsible for the evaluation of the concessionality of government loans and assessment of both debt service and absorptive capacities of the country (ZEPARU, 2013). By not undertaking absorptive capacity assessments, it implied that borrowed public funds could easily be diverted from desired national goals into unproductive activities or even personal uses. Also, although Zimbabwe had revised its public finance management laws, the absence of a proper institutional arrangement that facilitated and monitored the implementation and adherence to the stipulated public debt guiding principles, contributed to unsustainable government debt levels, especially between 2000 and 2008 (ZEPARU, 2013). It is, therefore, imperative to state that some of the previously contracted government debts in Zimbabwe occurred without the full assessment of their future implication on the country. Consequentially, previous public debt dynamics

are presently affecting tax reforms, national savings and investment policies of the country (Mumvuma *et al.,* 2013).

Foreign public debt accumulation in Zimbabwe, and many other developing countries, has been inevitable due to the lack of (1) an efficient money market; (2) effective and efficient financial settlements arrangements; and (3) clear legal framework that guides and ensures the safe transfer of securities and financial resources among agents (ZEPARU, 2010). Thus, the effect of the undeveloped domestic debt markets in Zimbabwe led to the over-reliance on foreign loans as the primary vehicles for financing the budget needs (ZEPARU, 2010). With a small, short-term deposit base in Zimbabwe, it meant that banks found it difficult to hedge long-term lending in the economy, thus increasing economic and financial vulnerabilities of the country (ZEPARU, 2010). According to the IMF (2016b), the absence of deepened financial markets in any given country, Zimbabwe included, provides some debt management and macroeconomic challenges which include: (1) making the domestic economy susceptible to volatile capital flows; (2) increasing reliance on costly foreign borrowing; and (3) increasing the need for a sizeable precautionary reserve (IMF, 2016b; 2016c).

Furthermore, like other developing countries, Zimbabwe has made some positive strides in promoting efficient and systematic domestic and foreign public debt management by enacting several legal statutes. However, the country retained some exclusive borrowing powers for the office of the president and the minister of finance (AFRODAD, 2010). For instance, Section 52 of the Public Finance Management (PFM) Act focuses on borrowing powers. It asserts that “the president authorises the responsible finance minister to borrow for any purpose the president considers expedient with one limitation, being that borrowing within Zimbabwe can only be up to 30% of the revenues of the general revenues of the country in the preceding financial year” (Zimbabwe Coalition on Debt and Development (ZIMCODD), 2010: 12).

In other words, according to the ZIMCODD (2010), the act reinstated the finance minister’s power to borrow and give loan guarantees, with the consent of the president only. This arrangement, according to AFRODAD (2010), makes the overall public debt management process extremely cumbersome since it is challenging to get timeous information about the source and uses of the contracted debt by the state president. The view of ZIMCODD (2010) is that loans or guarantees should be determined by the

country's capacity to repay as measured by debt sustainability ratios (AFRODAD, 2010). Fortunately, however, the GoZ has in the Accelerated Arrears Clearance, Debt and Development Strategy (ZAADDS) acknowledged the weakness of granting some executive borrowing power to the president, thus providing some prospects for improved debt management review in future (MOFED, 2012).

Domestic government debt management challenges in Zimbabwe have arisen from the absence of a general equilibrium domestic public debt analysis framework in the country, a condition which creates an opportunity for irresponsible borrowing by the government (Leo & Moss, 2009). Other factors that adversely impacted domestic public debt management in Zimbabwe include the lack of public finance transparency and accountability; an absence of qualified personnel to conduct domestic debt structure and sustainability analysis; as well as underdeveloped domestic debt markets for government securities (IMF, 2006). The range of funding sources to the government is often narrow, being limited mostly to treasury bills, thus restraining government discretion in terms of the risk characteristics of new debt.

According to the IMF (2006), the country also lacks skilled personnel, and advanced technological resources to enhance professional management of existing domestic debt stocks and issuance of new government debt. With regard to public finance transparency and accountability, the political leadership should enforce laws and regulations that ensure full accountability of state revenues. For instance, in the 2010 and 2011 Budget Statements, the Minister of Finance and Economic Development reported that the Chiadzwa diamond proceeds were not deposited into the official national revenue account, the Consolidated Revenue Fund (GoZ, 2011; MOFED, 2010). The government in 2011 reported that only US$103,9 million out of more than US$360 million worth of diamond exports was paid to the national treasury GoZ, 2011). This revelation implies that there are no strict accountability mechanisms in government financial matters, which exacerbated corruption activities and promoted misappropriation of public funds (AFRODAD, 2015; GoZ, 2011). The cumulative impact of this missing link was an unprecedented rise in government borrowing requirements and rising domestic public debt stocks.

Other challenges associated with domestic government debt management in Zimbabwe are ineffective and irregular public financial audits within state institutions

(IMF, 2014e). Worse still, when these audits are conducted and there is evidence of public finance abuse, the culprit(s) tend not to be impeached as they are protected politically, leading to more corruption in this country (AFRODAD, 2010).

Regarding guaranteed public debt and grants from the central government to local authorities and other government arms, it is vital to establish laws that compel state-owned entities to account on all received funds to guide against abuse of state funds. According to ZEPARU (2010), in many instances, state funds are misappropriated in parastatals through unproductive activities, forcing the government to continuously borrow to support the loss-making state enterprises.

Even though foreign public debt management institutional framework is partially in place, the debt management challenges arise from functional gaps and fragmentation in debt consolidation and coordination process. The foreign public debt management function is currently dispersed across three institutions, namely the president's office, the Ministry of Finance and Economic Development and the RBZ's External Sector and Financial Markets Departments (GoZ, 2017). The existence of such fragmentation in public debt management arrangement makes lines of action and debt accountability unclear. For instance, although the act mandates the External Loans Coordination Committee (ELCC) to contract new loans, there are incidences where credit lines and new loans are contracted on behalf of government by the president's office outside the purview of the ELCC or without the involvement of the RBZ or parliament (AFRODAD, 2010).

Administratively, the Ministry of Finance and Economic Development is responsible for Public and Publicly Guaranteed (PPG) medium-to-long term foreign public debt and the central bank for the capturing of domestic public debt (GoZ, 2015b). Typically, effective coordination, consolidation, recording and reporting of new and old debts is impaired by the absence of state-of-the-art software in Zimbabwe (IMF, 2017b; 2015b).

Economic factors, such as the underperformance of the Zimbabwean economy and low export revenues from commodity exports also explain the rise in demand for foreign government debt financing (GoZ, 2013). With such economic destitution, the GoZ had to contract new foreign debts at non-concessional terms from emerging international creditors (AFRODAD, 2010; Leo & Moss, 2009). More so, like Zambia,

Zimbabwe has no mechanisms to reinforce the undertaking of project appraisals and evaluations and ensure that only high return projects are embarked on by the state, and effectively managed to completion – to enhance the capacity of the government to repay the borrowed initial capital outlays.

The primary contributors to rising foreign government indebtedness is the disregarding overlooking of the publicly guaranteed private sector foreign debt in establishing government borrowing limits and debt sustainability analysis, to the extent that the government's overall debt position may not be fully revealed. Presently, the country does not have legal statutes that direct the reporting and dissemination of the country's foreign public debts to the general citizens, fully detailing the structure and composition of the government debt (AFRODAD, 2010). The ideal situation would be to have mechanisms and channels to ensure that information relating to government debt and contraction of new loans is available at no or little cost to the citizens, thereby increasing accountability and transparency of public funds.

From the challenges discussed above, this section concludes that although proper government debt management, domestic and foreign, is not an assurance against future debt challenges, it can, however, help to minimise Zimbabwe's financial susceptibilities to domestic and foreign *ad hoc* economic and financial shocks.

3.3 The dynamics of public debt service in Zimbabwe

3.3.1 The evolution of public debt service in Zimbabwe

Similar to the evolution of public debt stock in Zimbabwe, the origins of government debt repayments date back to the early 1980s. The escalating fiscal imbalances racked up government debt, domestic and foreign resulting in high domestic interest rates (Jenkins & Knight, 2002). By 1990, Zimbabwe's cost of public debt servicing constituted a substantial percentage of public sector revenue (World Bank, 2004b). However, although from the 1980s until 1997, Zimbabwe amassed huge stocks of public debt with repayment costs increasing each year, the country promptly honoured all its repayment obligations (AfDB, 2012). The revenue performance of the country allowed the government to make prompt debt service repayments (AfDB, 2012).

However, the economic contraction and the country's political risk stretching from 1998 to 2008, undermined the economy's ability to meet foreign public debt servicing obligations, resulting in the build-up of foreign payment arrears and subsequent debt service defaults (GoZ, 2014). The suspension of aid, budget and BOP support to Zimbabwe between 1999 and 2000 by the Bretton Woods institutions, AfDB and other donors, further worsened the liquidity and solvency position of the country (IMF, 2003b; 2001). More so, the high volume of maturing government securities in the late-1990s and early 2000s added to the rise in public debt repayment costs, which then limited the government's welfare programmes, especially in critical areas such as health, education and provision of critical industrial enablers, such as electricity, road and rail infrastructure and water reticulation (Mumbengegwi, 2002).

Between 1995 and 1999, the inexorable cost of public debt servicing began to erode the capability of the state to effectively fund social development programmes and public sector investments (Mupunga & Le Roux, 2014). In 2000, the Bretton Woods institutions further suspended general lending to Zimbabwe as a result of the country's failure to service its dues (IMF, 2001). In 2003, the central bank of Zimbabwe began to carry out quasi-fiscal activities, further worsening the ability of the state to meet its financial commitments, both domestic and foreign (Mupunga & Le Roux, 2014).

Despite the government's default on domestic and foreign debt service payments, some emerging creditors, such as China, India and Brazil, continued to advance non-concessional loans to the country in the pretext of Look East Policy and South-South Partnerships (MOFED, 2016). A considerable amount of the newly contracted debt was used in the procurement of agricultural-related equipment and inputs, as well as in repayment of old debts, especially the IMF arrears (Besada, 2011; Leo & Moss, 2009). Overall, according to Jones (2011), the average annual public debt service of Zimbabwe throughout the 1990s was US$600 million, approximately 30% of exports, while between 2003 and 2013, it was much lower, causing a rise in total debt arrears. During the multicurrency era, although the principal foreign public debt remained low, interest on foreign public debt arrears increased astronomically, causing deterioration in public debt service ratios (IMF, 2016b).

The economic challenges and government debt service defaults, however, set a stage for negotiations with international creditors and the implementation of several public

debt service and economic reforms in a bid to improve the country's risk profile and also as part of the measures to open up new lines of credit, to both the public and private sectors. These revenue reforms included the introduction of new taxes, upward adjustment of existing tax rates, introduction of interest and exchange rate controls, as well as the lengthening of the government debt maturity profile (Gono, 2008; RBZ, 2007b; Muzorewa, 2003; Mumbengegwi, 2002).

In the multicurrency period, the government initiated the re-engagement process with the main creditors, the IMF and World Bank. Within this policy direction, the GoZ sought to reduce the public debt repayment burden by undertaking the following initiatives: (1) carrying out joint SMPs; (2) implementing the ZAADDS and ZAREP; and (3) functionalising the Debt Management Office, among other reforms (RBZ, 2016c; GoZ, 2013; 2012).

Despite these public debt service management measures in Zimbabwe, the cost of public debt service payments is likely to remain high throughout the next several years because of the continued underperformance of the economy and continual rise in new non-concessional loans (IMF, 2016b). More so, the low commodity prices, especially of unrefined minerals, on the global markets since 2014 has continued to worsen the revenue base of the government and thus further depress the government's efforts to make sound public debt repayments on protracted international debt arrears (IMF, 2016d; RBZ, 2016c).

3.3.2 Public debt service reforms in Zimbabwe

In the 1970s and 1980s, Zimbabwe amassed huge foreign public debt, which subsequently became problematic to service in the late 1990s, prompting a series of public debt service reforms (IMF, 2001). Spontaneously, the IMF, World Bank and Paris Club were in 1992 and 1996 embarking on numerous debt reforms, targeting countries in serious repayment problems (Das *et al.,* 2012: 30-31). Unlike Zambia, Zimbabwe was not among the beneficiaries of these public debt relief initiatives by the Bretton Woods institutions, Paris Club and other creditors (World Gold Council, 1999: 49). Therefore, Zimbabwe's public debt repayment challenges during the review period varied from acute BOP difficulties to economic and financial problems alike (IMF, 2001).

According to the IMF (2001), Zimbabwe's high stock of public debt and high public debt service outlays are proof of poor debt management and an indicator of the country's need for significant structural policy and public debt service reforms. In the early 1990s, the country began to undertake a series of economic and financial reforms to find lasting solutions to the public debt servicing crisis, and also as a means of seeking ways to unlock fresh capital injections and alleviating poverty (Mumbengegwi, 2002). While domestic public debt service reforms centred mostly on fiscal and monetary policy adjustments, the foreign public debt service reforms concentrated primarily on re-engaging the traditional creditors and proper foreign public debt service management. Therefore, beginning in the 1990s, the country adopted a series of public debt service reforms designed with the complementary macroeconomic objectives of (1) lowering the level of public debt stock and its exposure to currency risk; and (2) stabilising the local currency to insulate the country from transitory shocks to public finance (RBZ, 2003a; 2003b).

The servicing of foreign public debt, especially, was absorbing budgetary and foreign exchange resources, thus impacting negatively on the government's spending on health, education and social service delivery (GoZ, 2012). To restrain the high foreign public debt service costs, the government employed a number of foreign debt service reforms which included:

(1) negotiations for new loan agreements with private banks and the IFIs – bridging finance loans;
(2) establishment of a new structured framework for re-engaging with the international community – to normalise relations and seek the removal of economic and political sanctions;
(3) the utilisation of donor grants, Special Drawing Rights (SDRs) and new loans;
(4) introduction of new institutional arrangements; and
(5) massive economic, finance and public debt restructurings (IMF, 2017b; 2017c; RBZ, 2015; GoZ, 2009a; 2009b).

One of the foreign debt service initiatives undertaken by the GoZ was to seek sovereign debt restructuring from the Paris Club, AfDB and Bretton Woods institutions (GoZ, 2010: 69). Sovereign foreign public debt restructuring, according to Das *et al.*

(2012: 16) “is an exchange of outstanding government debt, such as bonds or loans, for new debt products or cash through a legal process”. In line with this initiative, the GoZ prepared the ZAADDS (GoZ, 2012). The principal intention in crafting this policy guide was to restore financial and economic relations with its creditors and ensure financial re-engagement with the international community – leading to the rescheduling and restructuring of debt, and regaining investor confidence (GoZ, 2010).

In response to the policy ZAADDS, Bretton Woods institutions, AfDB and Paris Club prescribed several conditions prior to granting the country some of its requests. These conditions included diamond revenue transparency, wage bill rationalisation, fast-tracking of the restructuring of the central bank to enhance financial sector stability, among others (IMF, 2014e). In 2009, the GoZ started to implement economic recovery programmes in the interest of conforming to the stipulated structural reforms by its creditors. These economic reforms include the implementation of both the Short-Term Recovery Programme I and II, and the Medium-Term Plan (GoZ, 2011; MOFED, 2010). More so, the government also implemented ZAREP in an effort to speed up its commitment to finding a lasting solution for its foreign debt service payments (MOFED, 2012).

The implementation of the IMF supported SMP and clearance of the IMF arrears in October 2016 is evidence of the country’s commitment to ZAREP (RBZ, 2016b). The government’s approach to the IMF for emergency assistance between 2009 and 2013 assisted the country in building its currency reserves and boosting its economic performance (GoZ, 2013). During this period, the IMF helped in addressing macroeconomic stabilisation, monetary and exchange rate policy, financial sector restructuring, promoting public finance transparency, especially mineral proceeds and in capital account liberalisation (GoZ, 2013; RBZ, 2013). However, unlike Zambia, Zimbabwe did not receive any form of public debt relief from its creditors.

In 2014, the government passed a resolution to put a floor on payments to the Poverty Reduction and Growth Trust in a bid to settle its outstanding arrears with the IMF and the World Bank (RBZ, 2014). In 2015, the government used SDRs holdings to clear the US$110 million external payment arrears owed to the IMF (RBZ, 2016b). In line with this arrangement, in 2015, it also took a bridging loan facility from the African Export-Import Bank (Afreximbank), to partly pay its debt arrears of US$585 million and

US$16 million to the AfDB and the African Development Fund (AfDF), respectively (RBZ, 2016b). Additionally, the government used another bridging loan facility from China in the amount of US$1.1 billion to make part payments to the outstanding foreign payment arrears to the World Bank Group, comprising of the International Bank for Reconstruction and Development (US$896 million) and the International Development Association (US$218 million) (RBZ, 2016b).

Major institutional reforms began in 2011, aimed at enhancing foreign public debt consolidation and servicing (GoZ, 2011). The government with the support of the AfDB set up a Debt Management Office, which has, among other responsibilities, the implementation of the country's arrears clearance and debt relief strategies (AfDB, 2012).

In terms of currency reforms, the government in 2016 introduced Bond notes and coins to curb the externalisation of foreign currency and thus help mobilise foreign exchange required for the payment of foreign debts and arrears (RBZ, 2017). In the same vein, the government in 2016 implemented stern foreign exchange measures, such as the requirement to seek approval from the RBZ by corporates and individuals, before making any foreign payment (MOFED, 2017; RBZ, 2017). The government's objective was to accelerate the use of domestically generated revenues towards honouring its international financial obligations.

In addition to structural and institutional reforms, the country also increased its efforts to strengthen its foreign public debt management capabilities. In September 2015, Zimbabwe enacted a new debt management law, the Public Finance Management Act to provide comprehensive guidance on the issuance of debt and guarantees, as well as public debt servicing and reporting (GoZ, 2015b). This act, and all other reforms described above, were among the government's adopted initiatives to enhance the country's commitment and capabilities to clear its external financial obligations during the period under review. In general, the foreign public debt service reforms aimed to boost the country's liquidity and solvency position of this country. However, despite these foreign public debt payment reforms, Zimbabwe continues to be in high public debt service distress. The country is among the few in Southern Africa with protracted foreign public debt arrears with the World Bank and AfDB in 2017 (IMF, 2017b).

Regarding domestic public debt, the government reforms started in the late 1990s. During this period, the contribution of domestic public debt to total public debt increased markedly, such that, in 2000, approximately 60% of government revenue was channelled towards interest payments on the domestic public debt (OECD and AfDB, 2003). Faced with increased cash flow constraints, the GoZ started to stagger payments to its domestic creditors as well as freezing both civil service employment and wages (Brett, 2005).

Between 2000 and 2004, the cumulative domestic public debt stock reached a period high of Z$2.2 trillion in August 2004 prompting the government to undertake domestic debt restructuring measures, mostly a movement from short- to long-term debt (RBZ, 2005). In 2000, the government began to issue two-year government bonds, such by the end of December 2000, the bonds accounted for 56% of the total outstanding domestic public debt (RBZ, 2005). Furthermore, in 2003, the government started to issue long-term treasury bills of 91 days last issued in April 2000 and 3-year Variable Coupon Insurance Industry Bond worth Z$4.3 trillion (RBZ, 2005). By December 2007, the component of 365-day treasury bills, the government's main instrument for borrowing from the domestic money market, had reached a share of 99.4% relative to 5% in 1990 (Gono, 2008).

The government also implemented revenue reforms between 2005 and 2017, aimed at strengthening tax collection efforts, mainly because of the increase in informal business activities and a decline in the formal sector. These revenue reforms included the enforcement of the presumptive tax to the informal sector in 2015, and the introduction of a monthly payment system of the presumptive tax instead of the quarterly system (GoZ, 2015a). These revenue restructurings were to mobilise financial resources and enhance the government's capacity to honour its national debt dues. Other domestic public debt service reforms embarked by the government in the multicurrency era included: (1) putting a ceiling on total stock of arrears to domestic service providers, especially, agricultural input suppliers, and on capital certificates; and (2) putting a floor on protected social spending (GoZ, 2015a; MOFED, 2015).

The legislation reforms of domestic public debt reforms encompassed the enactment of the Reconstruction of State-Indebted Insolvent Companies Act in 2004 (AfDB, 2012). The act provided for the reconstruction of state-indebted enterprises that

cannot repay amounts made available to them from public funds (GoZ, 2006). This government initiative curtailed the rise in domestic public debt burden originating from loss-making parastatals and other government-guaranteed businesses.

Despite these reforms, domestic public debt service payments remained very high, reaching Z$5.9 trillion, or 27.8% of total outstanding government domestic debt, in January 2008 (Gono, 2008). Between 2005 and 2008, the domestic public debt service burden of Zimbabwe was significantly reduced by the hyperinflationary environment (World Bank, 2018a). Nonetheless, Zimbabwe's high public debt service cost persisted, especially for the foreign debt component (IMF, 2017b). In view of the foreign public debt service burden, the IMF, World Bank and AfDB reiterated that they would only make new loan disbursements to the country after existing debts had been cleared (IMF, 2017c).

3.3.3 Public debt service and economic growth trends in Zimbabwe

Public debt service cost in Zimbabwe became a source of anxiety in the early 1980s due to a number of factors, which included high public debt stock arising from non-concessionary loans, maturing debt contracted prior to 1980, soaring world interest rates between 1981 and 1985, shrinking government revenue base, and low export competitiveness (IMF, 2017b; 2017c; Jones, 2011; Brett, 2005; Jenkins & Knight, 2002; IMF, 1998). Following the rise in global interest rates between 1981 and 1985, and the massive deterioration in the country's terms of trade in the late 1990s, aggregate public debt payments reached US$435.4 million in 1983, and averaged US$402 million for the period 1983 to 1999 (World Bank, 2018a).

According to Jenkins and Knight (2002), the rising public debt repayment burden in Zimbabwe and its inability to access new concessionary loans on the foreign capital markets affected the country's economic growth rates and ability to service its debts between 1998 and 2002. More so, a combination of the excessive devaluation of the Zimbabwean currency, severe foreign exchange shortages, and high nominal exchange rates (from the hyperinflationary environment) between 2003 and 2008, are among the factors which contributed to Zimbabwe's public debt service overhang (Gono, 2008). In 2014, Zimbabwe was considered to be in public debt service distress, as evidenced by perpetual revenue constraints, springing from suppressed industrial

performance and low export competitiveness (IMF, 2014e: 17-18). In 2017, approximately 79% of the country's foreign public debt was in arrears (IMF, 2016c).

On the economic growth front, the economic growth dynamics in Zimbabwe between 1980 and 2017 were predominantly driven by the political economy in this country. Following the lifting of economic and political sanctions in 1980, Zimbabwe enjoyed a quick economic recovery. Real economic growth rate per capita in the first two years of independence, 1980-1981, averaged 9.5% (World Bank, 2018a). However, reduced foreign demand for the country's unprocessed mineral and agricultural exports, and the onset of a drought, cut sharply into the economic growth rate of Zimbabwe in 1982, 1983, and 1984 (Brett, 2005). In 1985, the economy recovered strongly, recording 3% annual economic growth rate per capita, before decreasing between 1986 and 1987, recording an average annual economic growth rate per capita of a negative 1.9%, primarily because of the drought and foreign exchange crisis (World Bank, 2018a).

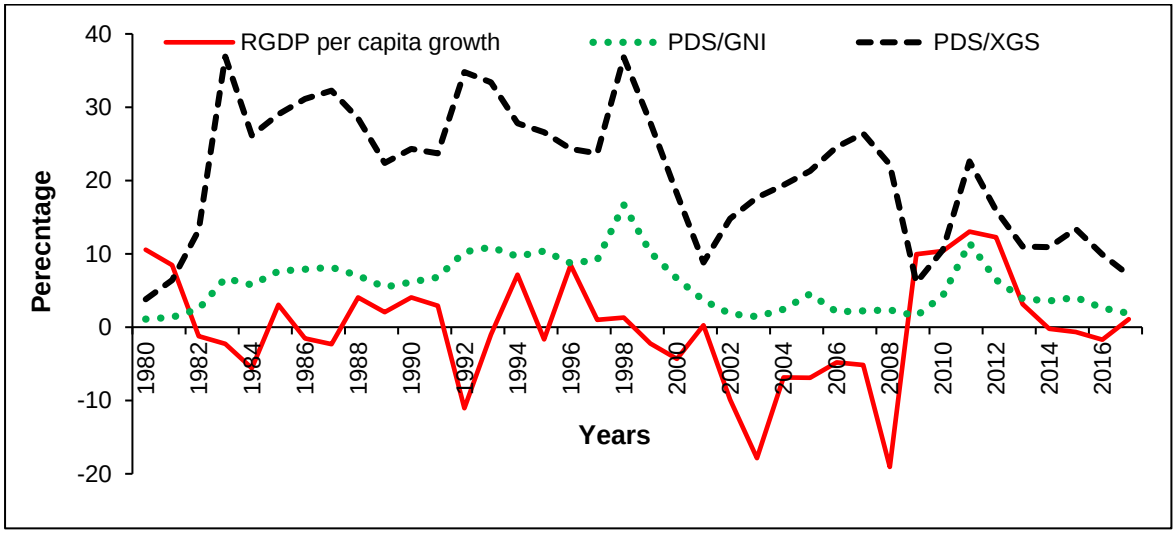
From 1990 until 2008, Zimbabwe was characterised by increased dependence on primary commodities; deindustrialisation and informalisation of the economy; dissaving and depressed domestic and foreign investment levels; deterioration of physical infrastructure; unsustainable fiscal imbalances; and rising domestic and foreign public debt and debt (Kanyenze *et al.,* 2017; Confederation of Zimbabwe Industries (CZI), 2015). The share of the manufacturing sector in GDP reached a period peak of 26.9% in 1992 before deteriorating to below 7.2% in 2002 (CZI, 2015). Furthermore, the weakening public institutions, coupled with fiscal and public debt mismanagement, corruption, and public policy uncertainty, intensified the deindustrialisation and increased informalisation (Kanyenze *et al.,* 2017).

Zimbabwe began experiencing severe economic hardships between 1998 and 2008 as evidenced by foreign exchange shortages; large differences between the official rate and parallel-market rate; hyperinflation; massive capital flight; and deterioration in agricultural output (Tyson, 2017; Gono, 2008; IMF, 2003b). During this period, the country amassed domestic and foreign public debt arrears due to the contraction in the government's revenue base and hence, no debt repayment (Gono, 2008).

The economy of Zimbabwe in the GNU period, 2009-2013, and multicurrency regime witnessed an economic rebound, with annual growth rate real GDP per capita

averaging 11.4% between 2009 and 2012, before falling to 3.1% in 2013 (World Bank, 2018a). The weakening of global commodity prices, particularly of raw minerals that began in 2013 coupled with persistent public policy inconsistency, caused the country's economic rebound to slow and subsequently trend downwards in 2014 until 2016 (IMF, 2017b; GoZ, 2013). Zimbabwe's budget deficit, for instance, widened from 8.5% in 2016 to 15.2% in 2017 (World Bank, 2018a). However, the GoZ announced in its recent Transitional Stabilisation Programme (2018-2020) that it plans to restore financial stability, attract more foreign direct investment and boost economic growth (GoZ, 2018b). Figure 3.6 shows the trends in public debt service and economic growth in Zimbabwe from 1980 to 2017.

Figure 3.6: Public debt service and economic growth trends in Zimbabwe (1980-2017)



Source: Author's computation from RBZ (2018a); World Bank (2018a)

In Figure 3.6, from 1983 to 1998, Zimbabwe suffered from liquidity challenges as evidenced by the public debt service-to-export of goods, which was on average above the IMF/World Bank indicative sustainability threshold of 18% (World Bank, 2004b; IMF, 2003b). During the periods, 1980-1989, and 1990-1999, the share of total public debt service in exports of goods and services reached a period peak of 36.9% in 1983 and 36.8% in 1998, respectively (World Bank, 2004b). From 1983-1998, an average of 28.8% of Zimbabwe's exports receipts were channelled towards public debt repayments, mostly foreign debt – an indication of acute resource outflow (World Bank, 2004b). More so, an average of 44.1% of the government's revenue went

towards debt and interest payments, a condition which could have contributed to a stern reduction in education, health and other social service expenditures in the 1990s (UNDP, 2012: 14). The financing of fiscal deficits and public debt repayment costs between 1990 and 1999 absorbed substantial private savings, around 8% of GDP per annum, thus further depressing the economic growth prospects of this country (World Bank, 2004b).

Despite the high public debt service costs during this period, the government still honoured both its domestic and foreign debt obligations (IMF, 2001). However, Figure 3.6 shows that between 1998 and 2008, Zimbabwe was unable to make consistent service repayments owing to the severe economic and financial problems that characterised the country during this period. With contraction in foreign exchange receipts due to: (1) the erosion of competitiveness; (2) depressed commodity prices; and (3) restricted access to foreign financing because of sagging creditworthiness, usable official foreign exchange reserves depleted (IMF, 2001: 3). The stock of foreign public debt arrears reached about US$500 million by end of 2000 (IMF, 2001). As illustrated in Figure 3.6, the compounding effect of the economic crisis was a reduction in public debt service payments beginning 1999, leading to decreased public debt service/GNI and public debt service-to-export of goods ratios – which from a fiscal sustainability perspective appears to be an improvement. However, the decline is due to a default on debt service payments and, therefore, a worsening of fiscal sustainability (IMF, 2001). The GNI also declined, and a fall in the ratio shows a chaotic situation with fiscal sustainability spinning out of control in Zimbabwe.

In 2001, the government said, “we are committed to fulfilling these obligations, but it’s clear that our economy is in no state to generate sufficient funds to clear the arrears...” (Bond, 2005: 20). Zimbabwe stopped paying its foreign public debts in 1999, perceiving them as being too costly in terms of the country’s economic and social objectives (Gono, 2008: 46).

Furthermore, Figure 3.6 shows that the ratio of public debt service to gross national income declined abruptly in 2000 and remained minimal until 2009. This decline in public debt service payments after 2000 is not a result of an improvement in revenue and export receipt performance but could be attributed to a deliberate government policy to postpone indefinitely the payment of all international debt and interest arrears,

and also to the government's incapacity to pay its foreign debt component (Mupunga & Le Roux, 2015). Also, the inflationary environment, which stretched from 2003 to 2008, and high seigniorage revenue permitted the government to redeem its entire domestic debt by December 2008 (Mupunga & Le Roux, 2015).

In contrast to the period before 2009, when the government would service its domestic debt through seigniorage revenue, under the dollarisation period (post-2009), the government needed to generate the foreign currency to pay its debts, both domestic and foreign. For example, the issuance of treasury bills worth US$4417 million by 2014, with a total of US$1,1 billion having matured and liquidated, describes the mounting cost of government debt service in Zimbabwe, in USD terms (MOFED, 2017). Beginning in 2014, the government made regular payments to the domestic government debt holders and IFIs with the hope of opening up new lines of credit (RBZ, 2015). For instance, the government made monthly instalments of US$150,000 to the IMF's Poverty Reduction and Growth Trust, in addition to the quarterly payments of US$900,000 and US$500,000 to the World Bank and AfDB, respectively (RBZ, 2015). The finances were drawn down from the SDRs and bridging loans (RBZ, 2016b).

Overall, during 1980-2017, the public debt build-up in Zimbabwe and resulting squeeze on foreign exchange resources were destructive to economic institutions. With severe depletion of foreign exchange resources, arrears on both government debt-service and international commercial payments became common in Zimbabwe (IMF, 2017b; 2009c; 2003). The depletion of foreign exchange reserves and subsequent foreign public debt default impaired the creditworthiness of Zimbabwe and the number of domestic and foreign firms willing to invest or do business in this country plummeted (IMF, 2009c).

3.3.4 Challenges facing public debt service management in Zimbabwe

While external factors have contributed to the public debt service problems in Zimbabwe, domestic policies also bear a large part of the blame. For instance, Zimbabwe opted for major development programmes and highly expansionary fiscal policies in the 1980s, leading to the acquisition of foreign public debt as spending increases outpaced the rise in tax receipts (Jenkins & Knight, 2002; GoZ, 1981). These

government spending policies continued for years despite the deterioration in global commodity prices.

Like Zambia and other Southern African countries, Zimbabwe continued to rely on foreign borrowing in the 1980s to meet its fiscal imbalances (IMF, 2001; 1998). This was despite falling export earnings, increasing inflationary pressures in the economy and adverse developments in foreign exchange rates (IMF, 2001; 1998). The escalating fiscal deficits also reduced the ability of the government to make consistent public debt-service payments (IMF, 2001). The domestic private savings were also discouraged by government policies designed to keep domestic interest rates low (Richardson, 2004). The outcome was negative real interest rates and disintermediation in the financial sector (World Bank, 2004b; Richardson, 2004).

Zimbabwe, just like Zambia, has a very high proportion of foreign public debt compared to its domestic debt counterpart (World Bank, 2018a; RBZ, 2018a). As a result, the public debt service problems in Zimbabwe relate mainly to the settlement of foreign currency-denominated government debt, both arrears and principal amounts (World Bank, 2016c: 3). According to the IMF (2017b: 3), the exponential rise in public sector indebtedness in Zimbabwe since the 1980s forced the country to commit substantial foreign exchange reserves towards public debt service payments. The enormous government debt service burden crowded out both public and private sector investments, thereby aggravating liquidity shortages, and hence intensified public debt service distress (IMF, 2017b: 3, 11; GoZ, 2009a: 53).

In general, the government debt service payment challenges in Zimbabwe are largely a result of, among other reasons:

(1) liquidity constraints due to poor economic performance;
(2) lack of proper public sector financial management principles;
(3) improper composition and structure of the public debt (mostly short-term and non-concessional);
(4) low investor confidence;
(5) low industrial and export competitiveness; and
(6) poor economic relations with the international donor community (Danha *et al.,* 2015; IMF, 2015b; 2014e).

Public debt repayment challenges for the local currency-denominated government debt have generally concentrated on poor economic performance and rapid contraction of the central government revenue base (GoZ, 2013). Apart from the economic deterioration, the high concentration of short-term government debt in the mid-1990s exacerbated the government's repayment costs on domestic debt (RBZ, 2003a). The compounding impact of rising nominal interests on domestic debt, narrowing tax revenue base and adverse developments in commodity export prices contributed to the increased problems of domestic public debt servicing in Zimbabwe in the late 1990s (RBZ, 2005). Furthermore, the lack of public sector financial transparency, especially on mineral export revenues, contributed to domestic public debt servicing problems in Zimbabwe (MOFED, 2012; 2010).

Furthermore, the active participation of the government in domestic capital and money markets in the mid-1990s and between 2003 and 2008, caused domestic nominal interest rates to rise, leading to an upsurge in debt servicing cost on maturing domestic public debt – with the consequence of defaulting in 1999 (Sibanda & Dubihlela, 2013). The economic agents interpreted the public debt repayment defaults, both domestic and foreign, as an eminent future rise in tax obligations and an impending depreciation of the local currency, resulting in the erosion of investor and savers' confidence (World Bank, 2016c). The implication was a massive capital outflow, which further worsened the revenue base of the government – crippling the government's ability to service the domestic and foreign debts (Mupunga & Le Roux, 2015).

Unlike domestic public debt payment challenges, the challenges of foreign public debt servicing in Zimbabwe originated mostly from the magnitude, composition and structure of the foreign public debt (RBZ, 2014). The foreign public debt in Zimbabwe is principally non-concessional (IMF, 2017b; 2014e). In 1999, more than 80% of previously contracted foreign public debt had matured, resulting in severe debt service defaults (RBZ, 2003a). Liquidity challenges further deteriorated due to the economic crisis and increased financial sector vulnerabilities that rocked the country between 1998 and 2009. The fall in terms of trade of mineral and agricultural exports further intensified the problem of servicing foreign currency-denominated debt in Zimbabwe during the period 1998-2008 (Gono, 2008).

Foreign public debt servicing problems in Zimbabwe were also exacerbated by the imposition of financial and economic sanctions on the country by both the western economies and most IFIs (GoZ, 2013: 8, 11-12). The sanctions contributed to the foreign public debt service challenges in numerous ways, which included:

(1) the cancellation of foreign grants, which the country used to receive from developmental partners, especially from multilateral financial institutions;
(2) the cancellation of budget and BOP financial support from the Bretton Woods institutions, thus constraining the revenue base of the state;
(3) the loss of most lucrative commodity export markets, especially that of beef to the European market;
(4) the disappearance of cheap lines of offshore finances; and
(5) the intensification of capital flight (World Bank, 2016c: 3-9; GoZ, 2013; Besada, 2011).

The cumulative outcome of these adverse economic developments was a general contraction of the Zimbabwean economy, leading to the excessive fiscal imbalances and increased contraction of new non-concessionary foreign public debt – and ultimately, an excessive public debt servicing burden (GoZ, 2009c). Overall, the decline in net capital inflows, including foreign financial assistance in the late 1990s, adversely affected the ability of Zimbabwe to meet its public debt service obligations. As a result, the combined net foreign borrowing and non-debt-creating flows, including the absence of public debt relief, worsened the ability of the country to honour its external obligations between 1998 and 2017. In 2017, the IMF suggested that Zimbabwe's indebtedness continued to outgrow its capacity to pay, mainly due to incessant amassing of interest arrears on foreign public debt, and so, there is little chance that the country could emerge from this public debt servicing problem in the near future (IMF (2017b: 66).

3.4 Conclusion

This chapter has discussed the growth dynamics of public debt, public debt service, both domestic and foreign, and economic growth in Zimbabwe from 1980 to 2017. Among the issues discussed were the major economic policies and reforms that described the growth in public debt stock and public debt service payments and the

corresponding economic growth trends in Zimbabwe during the period under review. From the chapter discussions, like in the case of Zambia, Zimbabwe's expansionary fiscal activities in the 1980s, primarily funded by public borrowing (mostly foreign), culminated into huge public debt stock by 1990.

Some of the highlighted challenges that led to the high public debt levels in Zimbabwe were weak institutional and legal public debt frameworks; lack of accountability, transparency and inclusiveness of the institutions involved in public debt management and loan contraction processes; declining gross domestic and foreign direct investment; massive company closures; and the absence of international financial support. However, like the case of Zambia, poor economic performance; public sector financial indiscipline; high composition of short-maturing debt; and absence of political will were identified as leading to the public debt service management challenges in Zimbabwe during the period under review.

In response to the public debt overhang and massive public debt service obligations, this chapter discussed some of the adopted public debt management reforms, which, like in Zambia's case, included improvement in public finance management through statutory amendments; implementation of new institutional arrangements; engagement of the international creditor community; and adoption of new currency reforms.

On the economic growth front, six distinct policy periods were identified; the pre-independence period (1965-1979); the corporatism period (1981-1990); the liberalism period (1991-1999); the economic recession period (2000-2008); the economic recovery period (2009-2013); and the economic stagnation and recession period (2014-2017). The chapter reviewed the period 1998 to 2008, which the AfDB referred to as the "lost decade", when Zimbabwe recorded the worst consecutive annual economic growth rates, averaging a negative 6.9%. It is during this time that the country amassed huge foreign public debt arrears, and also funded its recurrent expenditures through seigniorage. Although the hyperinflationary environment reduced domestic public indebtedness to near zero in 2008, rising world interest rates worsened the foreign public debt component.

CHAPTER FOUR

PUBLIC DEBT, PUBLIC DEBT SERVICE AND ECONOMIC GROWTH IN SOUTH AFRICA

4.1 Introduction

This chapter discusses the dynamics of public debt, public debt service and economic growth in South Africa and has four main sections. Section 4.2 debates public debt and economic growth dynamics in South Africa. Section 4.2 has four sub-sections that consider the following issues: an overview of the evolution of public debt in South Africa; public debt reforms; trends and challenges facing public debt management in South Africa. Section 4.3 discusses public debt service and economic growth dynamics in South Africa with four sub-sections, namely: an overview of the evolution of public debt service in South Africa; public debt service reforms; trends in public debt service and economic growth in South Africa and challenges affecting public debt service management in South Africa. Section 4.4 concludes the chapter.

4.2 The dynamics of public debt in South Africa

4.2.1 The evolution of public debt in South Africa

Public debt in South Africa has evolved quite substantially since the apartheid era, 1948-1994. Beginning in the 1950s until the late 1970s, South Africa had no active secondary bond markets, except for the underdeveloped primary debt markets, and it lacked distinct separations between monetary and fiscal operations (Leape & Ncube, 2009). The government, therefore, would periodically issue its securities, mainly treasury bills, on an open-ended tap basis, and mostly at a discount, until the early 1980s (Hirsch, 2005). In the 1980s, the government changed its public debt management approach and started to consolidate short-term debt issues into long-term benchmark bonds in ranges of 5 to 20 years (Mboweni, 2006; National Treasury, 2004).

In the same vein as Zambia and Zimbabwe, during this period from 1980 to 1993, South Africa experienced rising fiscal deficits stemming largely from adverse

movements in mineral world market prices, particularly gold, rising domestic interest rates, increasing costs to service government debts, high levels of disinvestment and divestment by foreigners, capital flight and low foreign exchange reserves (Government of South Africa (GSA), 1994). In 1993, South Africa returned to the international capital market when the IMF approved, for the first time since 1982, a loan of US$850 million under the institution's Compensatory and Contingency Financing Facility (IMF, 2000). The growth in public debt was further compounded by the introduction, in 1994 and 1995, of the global bonds worth US$750 million and US$573 million, respectively (Cross, 2004).

Contrary to Zambia and Zimbabwe, the South African government relied heavily on its domestic debt market for debt financing, especially in the mid-1980s and early 1990s when the country was under anti-apartheid economic and financial sanctions, particularly from the European countries and the United States of America (Carmody, 2002). As a result, the growth in domestic public debt was pronounced and surpassed the growth in foreign public debt. Until 2017, the local currency, Rands, mostly denominates South African government debt, with a small proportion of the country's domestic debt held by non-residents (National Treasury, 2018a).

Also, from 1976 to 1993, none of South Africa's existing foreign public debt was with major international financial institutions, such as the World Bank and IMF (National Treasury, 1995; 1994). Due to the economic and financial sanctions, foreign loans were obtained from a few individual world governments and other private financial institutions (National Treasury, 1995; 1994; Hirsch, 1989a; 1989b). The foreign loans were mainly to fund the huge public sector investments, aimed at making the country self-sufficient, economically and financially (Cross, 2004; Clark, 1994). During the apartheid period, the evolution of public debt in South Africa was mostly influenced by political and macroeconomic instability.

In the post-apartheid period, 1994-2017, growth in public debt, both domestic and foreign, was primarily determined by several factors including: (1) the inheritance of previous debts by the state; (2) the rising budget imbalances due to domestic and global financial and economic crises; and (3) the revaluation of foreign government securities and loans (National Treasury, 2018a; 2012a; 2012b; 1995; Mboweni, 2006). Much like other emerging economies, the global financial crisis of 1997/98 and

2008/09, and the economic recession that followed, inevitably led to the introduction of countercyclical fiscal policy measures by the South African government – to sustain increased public sector investments in infrastructure, and also, to continue supporting welfare programmes (National Treasury, 2014a; 2014b). The outcome of the government intervention measures was large budget deficits and increased government borrowing from domestic capital markets to fund the escalating budget imbalances (South African Reserve Bank (SARB), 2014). Additionally, in 2017, the government of South Africa marginally increased its funding of external financial obligations by borrowing from international capital markets (National Treasury, 2018b).

Furthermore, in the post-1994 period, the government of South Africa singled out public debt as one of the major threats to domestic economic recovery leading to massive institutional, legal, public finance, public debt management and economic reforms. These reforms resulted in: (1) the deepening of domestic capital markets – now characterised by sound public debt management policies and modern financial settlement mechanisms; (2) significant variations in government debt structure and composition; and (3) the formation of several public debt management institutions, such as the Bond Exchange of South Africa (BESA), the Fiscal and Finance Commission, the Debt Management Office and the Asset and Liability Management division of the National Treasury (GSA, 2014a; 1994). Further, in the late 1990s, the country ratified the Public Finance Management Act to continuously improve on the management of public sector indebtedness (GSA, 1999). More so, between 1994 and 2017, the South African government, through the Department of Finance, promulgated a series of revenue, expenditure and financial frameworks aimed at narrowing fiscal deficits.

Presently, as opposed to Zambia and Zimbabwe, the South African domestic capital market is among the most developed and liquid markets in Africa and remains the government's leading source of budget financing (National Treasury, 2018a). The public debt portfolio remains well-structured characterised by longer-dated loans (National Treasury, 2018a). Finally, the short-term loans in South Africa are mainly stable, constituting less than 12% of total public debt stock in 2018 (National Treasury,

2018a). Also, the proportion of foreign public debt remained low, amounting to 8.8% of GDP in 2017 (National Treasury, 2018a).

4.2.2 Public debt reforms in South Africa

The exceptional growth in fiscal and political challenges in the 1960s pressed most emerging economies, such as South Africa, Brazil, Colombia, Thailand and Mexico, to make substantial public debt and public finance management reforms (Abbas *et al.,* 2011). In the 1970s, South Africa lacked comprehensive legal and regulatory public debt policy frameworks so that public spending and financing decisions were mainly driven by political desires and partially by the need to ease public debt servicing costs, regardless of the public debt composition or structure (Ajam & Aron, 2007). Nonetheless, during this period, South Africa had some *ad hoc* public financial management measures, which included strict financial market regulations, mostly the exchange and domestic interest rate controls (Hirsch, 1989a; 1989b; Harris, 1986; GSA, 1975). Also, between 1970 and 1979, the state introduced new debt instruments and also practised partial public debt sustainability analyses (Bhorat *et al.,* 2014).

In the late 1980s, the government of South Africa implemented more formalised and prudent approaches to financial and public debt management. The government debt reforms included carrying out partial domestic debt risk assessments, especially on the linkage between debt and the general performance of the economy (National Treasury, 1994). The deregulation of domestic financial markets by the South African government further enhanced the development of domestic debt markets and the separation of fiscal and monetary operations (SARB, 2006). The government's deregulation initiative meant that the government placed its focus on selling its debt securities in the secondary debt markets while the central bank concentrated on auctioning government securities in the primary debt markets (National Treasury, 2008). In the early 1990s, the increased macroeconomic instability and heightened volatilities in domestic and world interest rates, exchange rates and commodity prices forced the government to intensify its liberalisation of capital markets, in addition to seeking regularisation of financial and economic relations with the outside world (Parliament of the Republic of South Africa, 2011; IMF, 2005d).

Public debt reforms in the post-apartheid period were concentrated extensively on enhancing public debt management practices, both domestic and foreign, through:

(1) broadening of public debt instruments by lengthening the maturity periods of government securities - thus increasing the diversification of government debt portfolio;
(2) restructuring of the domestic financial market;
(3) establishing appropriate public debt management institutional arrangements;
(4) carrying out comprehensive public debt analysis and risk management frameworks;
(5) integrating cash and government debt management roles; and
(6) improving the legal and regulatory frameworks that guide in the issuance, management and payment of government debt securities (National Treasury, 2018a; 2015; 2012a; 2012b; 2008; 1994; Bhorat *et al.,* 2014; World Bank, 2011; Calitz *et al.,* 2010; Faulkner & Loewald, 2008).

Inevitably, the adopted public debt reforms increased the strengthening of the domestic debt market and reduced both the country's fiscal risk and exposure to external financial and economic shocks.

Among the newly introduced domestic debt instruments, after 2000, were retail savings bonds, retirement annuities, post-retirement savings bonds, fixed-rate bonds, zero-coupon and inflation-linked bonds (through reverse purchase facility), in addition to switch or exchange programmes (National Treasury, 2013; 2004; BESA, 2006). According to the National Treasury (2013), the introduction of these new government securities increased the participation of local and foreign investors in government-domestic securities, mostly in the secondary markets. With the above instruments at its disposal, the South African government could finance its total budget requirements in a sophisticated and liquid domestic debt market without reverting to foreign borrowing (National Treasury, 2013). In 2018, long-term loans denominated in Rands, mostly fixed-rate and inflation-linked bonds, were the main public borrowing instruments, representing 78.9% of the government debt stock (National Treasury, 2018a).

As opposed to Zambia and Zimbabwe, whose public debt management roles are the primary responsibility of the central bank, the South African government in 1996 assigned to the Asset and Liability Management (ALM) division of the National Treasury (formerly the Department of Finance) the responsibility of controlling domestic and foreign public debt portfolios (GSA, 2001). The ALM division was, therefore, mandated to:

(1) perform cash management operations, including trading government financial instruments in the money market and making cash flow forecasts;
(2) undertake credit risk assessments for government securities;
(3) invest government money; and
(4) manage government loans and guarantees (GSA, 2001).

This debt management rearrangement fostered effective public debt management resulting in sound improvement in the country's international creditworthiness.

On the institutional front, the domestic public debt management reforms in South Africa included the establishment of the South African Revenue Service (SARS) in 1994, through the Katz Commission (National Treasury, 2002). It is an autonomous revenue service body formed by combining the Inland Revenue and the Customs and Excise departments (National Treasury, 2002). The purpose of establishing SARS was to curtail rising fiscal deficits through improved revenue collection mechanisms (GSA, 1997). To accomplish this state mandate, SARS had the responsibility of enacting and implementing extensive tax reforms and more efficient tax collection approaches (GSA, 1997: 6). Still, on institutional reforms, the government in 1997 constituted the Fiscal and Financial Commission, an independent body mandated with researching on government spending and revenue matters and making appropriate financial recommendations to Parliament (National Treasury, 1997).

In other related institutional domestic public debt reforms, the South African government made the office of the Auditor-General (AG) an autonomous entity to improve the oversight of public finance management in the country (GSA, 2004). This measure of including the AG office in public finance management complements the responsibility of the National Assembly, which is mandated to supervise budget preparation and implementation. Complementary revenue and expenditure

management measures include the provision by the government to have public enterprises audited by private firms, with the findings forwarded to the AG's office (Parliament of South Africa, 2011). Additionally, since 2003, the government of South Africa introduced Internal Audit Units in all government institutions and departments with the prime goal of reducing the budget deficit, government debt and borrowing costs (Parliament of South Africa, 2011).

Other domestic public debt management reforms in South Africa after 2003 included massive revenue and expenditure management restructuring. For instance, the government of South Africa implemented computerised systems on countrywide networks for purposes of facilitating revenue administration for income tax, value-added tax and customs duties (National Treasury, 2005). To effectively contain public sector salary payments, transverse computerised payroll management systems, Basic Accounting System (BAS) and Personnel and Salary Administration System (PERSAL), were established (Ecorys, 2014; 2008). The BAS, which replaced the Financial Management system in 2004, provides computerised accounting across government departments and sets public sector expenditure ceilings using the drawdown schedule (Ecorys, 2008). According to Ecorys (2008), the PERSAL system is a useful government budgetary control tool integrating the establishment of government posts. The two systems, BAS and PERSAL, made it possible for the government to make meaningful public debt forecasts based on the analysis of debt maturity profiles and see if they meet the requirements of the drawdown schedule (Ecorys, 2008). Thus, the implementation of the BAS and PERSAL, as well as the introduction of the Medium-Term Budget Policy Statement in 1997, enhanced the government's capacity to integrate cash and internal public debt management in South Africa (National Treasury, 2003).

The legal framework on public debt management in this country is underpinned by the constitution and the Public Finance Management Act Number 29 of 1999. The enactment of the Public Finance Management Act resulted in increased fiscal transparency and the formation of the National Treasury, a merger of the former departments of Finance and State Expenditure (Siebrits & Calitz, 2004: 767-768). The Public Finance Management Act of 1999 of South Africa stipulates that the responsible minister of finance is the sole authority for the contracting of loans and guarantees that

bind the National Revenue Fund (Ecorys, 2008). However, in making borrowing decisions, the minister of finance is guided by the Budget Review and Intergovernmental Fiscal Review, which are budgetary instruments tabled before parliament, which stipulate the country's government debt targets (National Treasury, 2003).

Also, in South Africa, the country's 1996 constitution incorporates domestic public debt management reforms. Prior to the enactment of the country's constitution in 1996, public finance and expenditure management systems in this country were highly disjointed and lacked strict oversight resulting in increased government indebtedness (National Treasury, 1996). The 1996 constitution promotes effective public financial management by ensuring transparency and accountability of budget processes at all three levels of government (GSA, 1999). The constitution further limits the borrowing powers of provincial and local governments (GSA, 1999). Additionally, it mandates the parliament to be an overseer of budget formulation and implementation, in addition to the function of amending money bills (GSA, 1999). Furthermore, in 2009, the Money Bills Amendment Procedure and Related Matters Act (Number 9 of 2009) was passed for purposes of increasing the role of the parliament in overseeing fiscal operations and strengthening parliament's contribution to policy implementation (Parliament of the Republic of South Africa, 2011).

In 2003, the government's Municipal Finance Management Act extended the budget reforms to local governments. As was the case with Zambia and Zimbabwe, additional domestic public debt reforms in South Africa included the restructuring and rearrangement of public sector entities, resulting in the privatisation and commercialisation of some state-owned enterprises, with part of the privatisation receipts channelled towards public debt service repayments (World Bank, 2011). The restructuring of state-owned companies fostered the government's efforts to curtail fiscal imbalances and lessen the overall public debt service costs (Donaldson, 2000: 17).

Foreign public debt reforms, both before and after 1994, were less pronounced owing to the smaller foreign public debt size relative to the domestic public debt component (World Bank, 2018a). In the 1980s, the government adopted a foreign borrowing policy, in which the government would not rely extensively on foreign debt as a means

of funding fiscal imbalances (National Treasury, 1995). Also, at the same time, foreign public debt reforms took the form of stringent capital and exchange rate controls (SARB, 1998; Leap, 1992). For instance, in 1985, the government introduced a two-tier exchange rate system, the managed float commercial Rand and the free-floating financial Rand, and strict exchange controls. The exchange rate reforms were partly in response to the punitive economic and financial isolation, as well as a strategy of managing foreign debt through reducing rampant capital outflows (Bhorat *et al.,* 2014; SARB, 1998: 6). Supplementary foreign public debt management measures comprised: (1) the imposition of a foreign public debt repayment moratorium in the mid-1980s; (2) a revamp of the foreign public loan contraction process stipulated in the country's constitution of 1996 and the Public Finance Management Act of 1999; and (3) the undertaking of scheduled comprehensive annual foreign public debt sustainability analyses by the National Treasury after 1996 (Bhorat *et al.,* 2014; National Treasury, 2014a; 2014b).

4.2.3 Public debt and economic growth trends in South Africa

Most emerging economies, South Africa included, have been depending on both domestic and foreign capital and money markets to finance budget requirements and stimulate economic growth (Fedderke & Romm, 2005; Ovenden & Cole, 1989). Thus, the growth of public debt in South Africa over the period from 1960 to 2017 was influenced by movements in domestic and foreign interest rates, exchange rates and inflation rates, as well as the government's net borrowing requirements (IMF, 2005d).

With the demise of the apartheid regime in 1994, the new South African government inherited foreign public debt worth more than R14 billion, owed mostly to the private banks in Germany, Switzerland, the United Kingdom and the United States of America (National Treasury, 1995). In regard to section 239 of South Africa's constitution, these debts and other financial commitments of the apartheid government, which could directly link to asset acquired in accordance to the constitution in the provinces, were adopted by the provincial governments (National Treasury, 1995). Further, the debts and liabilities which could not be related plainly to the assets assigned to the provinces were adopted by the federal government (National Treasury, 1995).

Since then, the country has also embarked on the fiscal, economic and financial reforms which ultimately moulded the current structure, composition and trends of its public debt and economic growth process. The South African government's austere economic and financial measures after 1994 not only reduced the country's foreign public debt stock but also made the domestic government securities more attractive to both residents and non-residents (National Treasury, 2012a).

4.2.3.1 Domestic public debt trend in South Africa

Unlike Zambia and Zimbabwe, the domestic public debt in South Africa has always constituted the most substantial proportion of total government debt since the 1970s, averaging 92.2% between 1975 and 2017 (National Treasury, 2018a). In December 2017, the total public debt, domestic and foreign currency-denominated debt, of South Africa amounted to R2.5 trillion (or 50.7% of GDP) compared to R2.3 trillion (or 49% of GDP) in 2016 (National Treasury, 2018b: 11). The rise in public sector indebtedness could mostly be attributed to the increase in domestic public debt, which accounted for more than 53% of GDP in December 2017 (National Treasury, 2018b). According to the National Treasury (2017), the increase in government's domestic indebtedness had been a cumulative effect of the need to finance rising annual budget deficits, refinancing maturing government debt securities and/or where necessary as a tool to regulate the domestic monetary situation.

The domestic debt market of South Africa provides residents of the country with an alternative option to banking for allocating their savings. Between 1970 and 1994, extensive government interference on market processes greatly expanded state expenditures, which led to runaway fiscal deficits (Faulkner & Loewald, 2008). The combined effect of (1) exchange control regulations and stringent asset requirements; (2) international isolation; (3) high world interest rates; and (4) new government borrowing preferences, all contributed to limited access to international finance, resulting in the need to develop a vibrant domestic debt market to fund growing budget deficits (GSA, 2014a; SARB, 2006; Moss & Obery, 1987).

Apart from a large non-banking private sector, the success of the country's macroeconomic policies in stabilising the economy between 1994 and 2017 and high yield rates in South Africa, contributed to increased confidence and participation of

domestic and foreign investors in government securities (National Treasury, 2018a; SARB, 2014). Generally, the establishment of BESA in 1996 spearheaded the development of the country's domestic debt market (National Treasury, 1996). Since then, the focus of the country was to develop the domestic debt market, maintain creditworthiness and promote a balanced government debt maturity structure (National Treasury, 2017; 2012a).

From a backward perspective, the development of BESA in South Africa, a formal bond exchange, resulted from the recommendations made in the Stals and Jacobs reports, and dates back to the Bond Market Association of 1989 (IMF & World Bank, 2003). Following the recommendations, the South African authorities recognised the need to have a self-regulated bond market, controlled by domestic market participants rather than imposed foreign control (IMF & World Bank, 2003). Consequently, in 1996, BESA was formed (National Treasury, 1996).

After 1999, the government's focus switched towards the minimisation of debt-related costs, risk management, diversification of domestic debt instruments and increased access to domestic capital markets (National Treasury, 2016a). These developments have shaped the structure of the South African government domestic debt during the period under review. The total domestic public debt of South Africa, marketable and non-marketable, was R2.3 trillion as at 31 December 2017 (National Treasury, 2018b: 86). The growth in domestic public debt was a consequence of significant issuances of domestic marketable debt instruments, both bonds – comprised of fixed-rate, inflation-linked and zero-coupon bonds, and treasury bills (National Treasury, 2018b). Table 4.1 shows the composition of domestic public debt in South Africa over the past six years to 2017.

Table 4.1: Composition of domestic public debt in South Africa (by instrument) (2012-2017)

	Composition by instrument (R billion)					
	Short-term	**Long-term**				
	Treasury bills	*Fixed-rate bonds*	*Inflation-linked bonds*	*Retail bonds*	*Zero coupons*	*Other*
2012	190.9	793.3	224.5	11.3	1.0	0.1
2013	214.1	917.7	298.7	9.5	1.0	0.1
2014	223.6	1039.8	358.7	9.0	0.9	0.1
2015	236.5	1158.3	418.9	9.0	0.1	0.1
2016	256.2	1300	443	8.9	0.2	0.1
2017	332.7	1424	516	9.1	0.1	0.1

Source: Author's computation from National Treasury (2018a); SARB (2018)

Table 4.1 presents a scenario in which a high proportion of the government's domestic debt between 2012 and 2017 was sourced from the local capital markets, mainly from the issuance of two types of savings bonds, that is, fixed-rate and inflation-linked bonds. Fixed-rate savings bonds were issued in categories of 2, 3 and 5 years, and the inflation-linked bonds in categories of 3, 5 and 10 years (National Treasury, 2017). In 2000, the government of South Africa introduced, in the domestic bond market, fixed income bonds and inflation-linked bonds, to be sold weekly (BESA, 2006). Inflation-linked bonds, together with retail savings bonds (introduced in 2004), deepened the domestic debt market of South Africa and thus reduced the over-reliance on monetary financing of deficits, that is, treasury bills, as shown in Table 4.1 (National Treasury, 2018a).

The retail savings bonds were sold to the public by the National Treasury, and any other organisation or retail outlet registered with BESA, but mostly, any South African bank, broker or Pick and Pay retail outlets (SARB, 2018). Furthermore, the issuance of retail bonds also helped to boost the country's gross national savings and diversify the government domestic debt portfolio (National Treasury, 2019; 2012b). Also, the government's initiative in increasing the issuance of fixed interest rate bonds, denominated in Rands, was to minimise the risks of future currency depreciation (The Presidency, 2006). Other government bonds in South Africa are vanilla bonds, variable bonds and consumer price index bonds (The Presidency, 2006). In South Africa, treasury bills are auctioned every Wednesday by the central bank on behalf of the

government (SARB, 2018). Table 4.2 shows the structure of domestic public debt in South Africa for the period 1970 to 2017.

Table 4.2: Structure of domestic public debt in South Africa (1970-2015) (in R' million)

	Total bills	Total bonds	Total domestic public debt	Bills/Total domestic public debt (%)	Bonds/Total domestic public debt (%)
1970	122	5022	5144	2.4	97.6
1975	1088	8120	9208	11.8	88.2
1980	1571	17809	19380	8.1	91.9
1985	2551	33282	35833	7.1	92.9
1990	8041	81223	89264	9.0	91.0
1995	8360	254007	262367	3.2	96.8
2000	25500	339731	365231	7.0	93.0
2001	17910	331505	349415	5.1	94.9
2002	22050	328820	350870	6.3	93.7
2003	28600	359700	388300	7.4	92.6
2004	34450	394143	428593	8.0	92.0
2005	40400	417380	457780	8.8	91.2
2006	45800	422064	467864	9.8	90.2
2007	51850	426415	478265	10.8	89.2
2008	65000	462751	527751	12.3	87.7
2009	114540	585992	700532	16.4	83.6
2010	136150	733438	869588	15.7	84.3
2011	155159	890256	1045415	14.8	85.2
2012	171985	1038849	1210834	14.2	85.8
2013	192206	1217512	1409718	13.6	86.4
2014	202217	1399282	1601499	12.6	87.4
2015	209468	1572574	1782042	11.8	88.2
2016	249970	1731657	1981627	12.6	87.4
2017	292970	1990643	2283613	12.8	87.2

Source: Author's computation from National Treasury (2018a)

In Table 4.2, bonds accounted for the main component of the outstanding stock of domestic public debt in South Africa, representing 97.6% and 87.2% in 1970 and 2017, respectively (National Treasury, 2018a). The government's preference for bonds over Treasury bills was partly because bonds provided a reliable source of current income and enhanced domestic liquidity. As part of the government's effective control of its

domestic debt portfolio, state bonds are either redeemed or swapped into new bonds (National Treasury, 2018b). Table 4.2 also shows an abrupt rise in the issuance of treasury bills in 2016 and 2017, which was in expectation of increased revenue-expenditure mismatches and periodic cash flow pressures (National Treasury, 2018b: 84).

As a result of the country's unfavourable economic experience of the 1997 and 1998 global financial crisis, the government of South Africa decided to make the development of a vibrant corporate bond market a policy objective (National Treasury, 1998). The most likely cause of this policy development direction by the South African authorities was the assertion that a burgeoning domestic currency corporate bond market would directly impact on the stability of both the financial system and overall economic performance. The capital markets are a significant source of funds for infrastructure and other investment activities (National Treasury, 1998).

The increased issuance of government bonds from 1970 to 2017 broadened the sources of funding the fiscal financial requirements and also stimulated the growth of the country's bond market (see Table 4.2). The other possibility for issuing government bonds could have been to stabilise domestic interest rates and facilitate competition in financial services in the South African economy, particularly given the reduction of fiscal deficits between 1996 and 2008 (SARB, 2013).

The intention of increasing domestic debt instruments and lengthening their maturity periods was in part to limit and/or spread domestic public debt service costs (SARB, 2016). More so, the strong demand in domestic public debt securities by non-residents was necessitated by robust economic growth rates, sound financial management policies in South Africa and continued low yield rates on debt securities in developed countries (World Bank, 2018a; National Treasury, 2018b). In 2011, the government further diversified its debt securities through the issuance of Sukuk (Islamic) bonds – further increasing the proportion of domestic public debt held by foreigners (National Treasury, 2014c; 2014d).

Sukuk bonds are a financial tool which differ from conventional bonds in that they are an asset-backed security – they represent ownership in a tangible asset, usufruct of an asset, service, project, business, or joint venture (National Treasury, 2014d). In

South Africa, Rand-denominated Sukuk bonds were issued based on an al-Ijara structure priced at a coupon rate of 3.9% (National Treasury, 2014d). The government's strategy to issue an Islamic bond also set a benchmark for state-owned enterprises seeking diversified sources of funding for infrastructure development (National Treasury, 2014d).

The Sukuk bonds increased domestic-debt issuance and reduced the share of foreign public debt from 19.9% in 2007/08 to 5.4% in 2011/12, respectively (National Treasury, 2014c; 2014d). Also, the inclusion of South Africa in the World Government Bond Index in October 2012 contributed positively to the rise in non-resident participation in government bonds (National Treasury, 2012a). Table 4.3 provides a summary of the investor base in South Africa over the period from 2010 to 2017.

Table 4.3: Domestic government bonds in South Africa (by holder) (2010-2017)

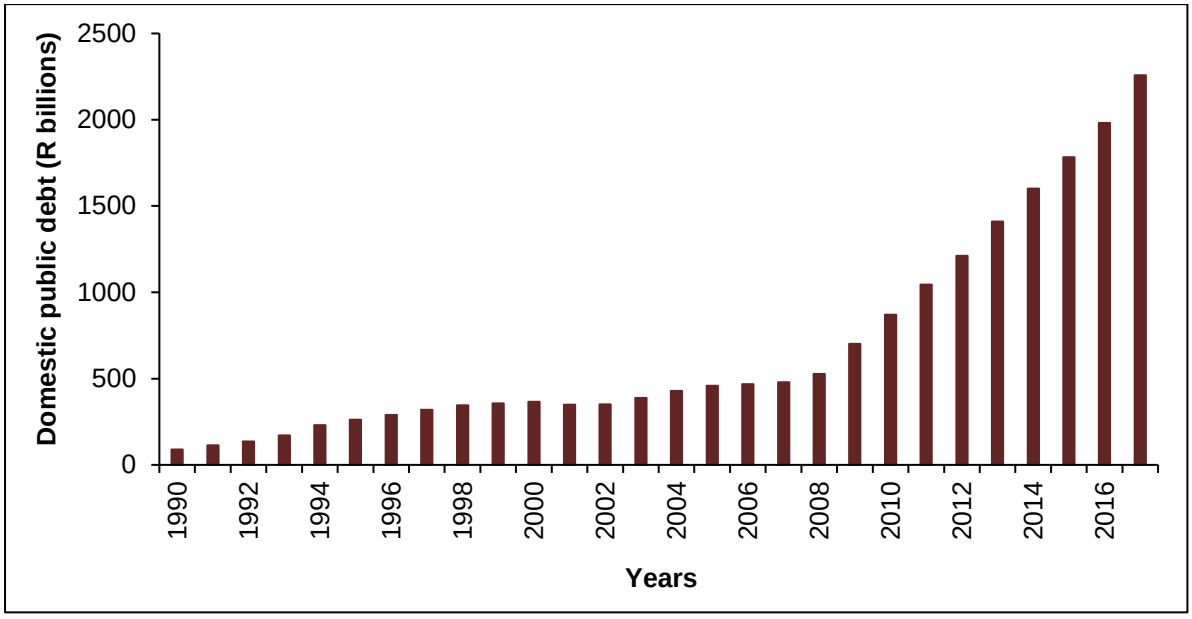
Bondholder	**%**							
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Pension funds	*36.5*	*35.2*	*31.8*	*29.1*	*31.7*	*30.7*	*28.2*	*25.8*
Monetary institutions	*17.7*	*16.3*	*17.0*	*14.6*	*14.7*	*17.6*	*18.1*	*15.4*
Insurers	*14.1*	*11.6*	*9.4*	*8.6*	*8.2*	*8.3*	*8.6*	*7.3*
Other financial institutions	*8.1*	*8.0*	*5.8*	*8.2*	*8.7*	*10.3*	*10.1*	*10.2*
Others	*1.8*	*2.0*	*2.1*	*3.1*	*0.7*	*0.7*	*0.2*	*0.1*
Residents	**78.2**	**70.9**	**64.1**	**63.6**	**64.0**	**67.6**	**65.2**	**58.8**
Non-residents	**21.8**	**29.1**	**35.9**	**36.4**	**36.0**	**32.4**	**34.8**	**41.2**

Source: Author's computation from National Treasury (2018a)

As shown in Table 4.3, foreign investor holdings of domestic government bonds reached 41.2% in 2017 compared to 21.8% in 2010 (National Treasury, 2018b). In absolute terms, holdings by these investors increased from R557.6 billion in 2016 to R602.4 billion in 2017 (National Treasury, 2018a). With regard to domestic investor holdings of domestic public debt in South Africa, as was the case with Zambia and Zimbabwe, financial institutions were the largest holders of government debt, partly

due to the need to meet their prescribed liquid asset requirements (National Treasury, 2018b). Overall, the composition of holders of government debt in South Africa varies immensely on the type of instrument. For instance, investors aged 50 years and above generally hold retail savings bonds; foreign investors mainly hold fixed-rate bonds; while domestic pension funds who would want to hedge against inflation hold inflation-linked bonds (National Treasury, 2016b: 37-44). Figure 4.1 shows the growth in domestic public debt in South Africa from 1990 to 2017.

Figure 4.1: Domestic public debt in South Africa (1990-2017)



Source: Author's computation from National Treasury (2018a)

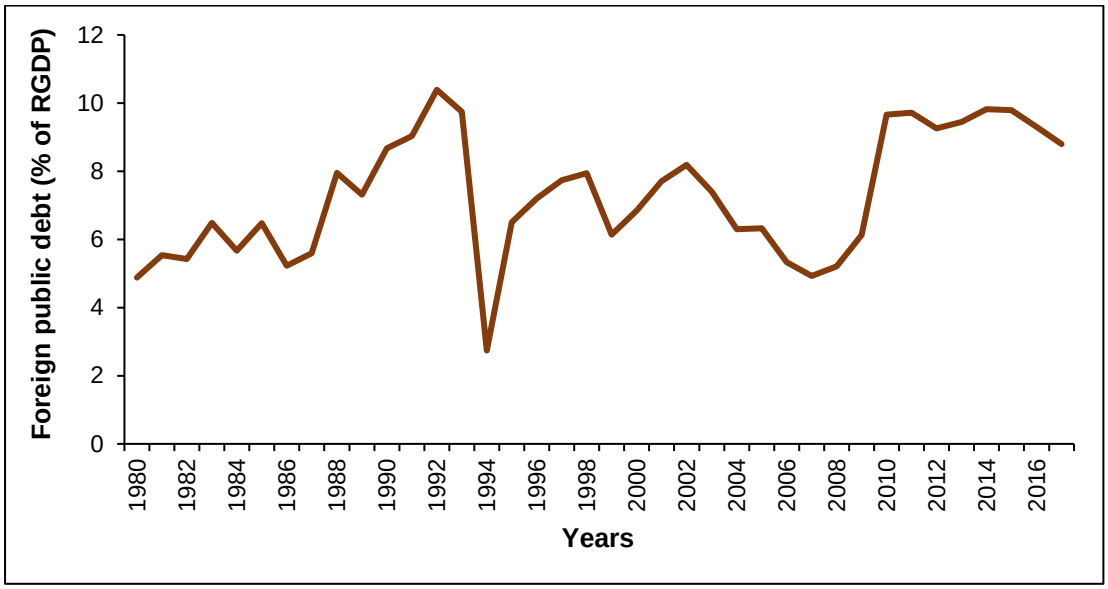
In Figure 4.1, domestic public debt (mostly constituted of treasury bills and bonds) rose steadily between 1990 and 2008, and exponentially from 2009 to 2017. The average ratio of domestic public debt in South Africa increased from 30% of GDP between 1980 and 1989 to 37% of GDP between 1990 and 1994, and 45% of GDP between 1995 and 2000 (Christensen, 2004). The domestic public debt trend portrayed in Figure 4.1 further suggests that South Africa's debt and financial markets were expanding, as evidenced by the country's broad money that amounted to 46% of GDP between 1980 and 1989, 53% of GDP between 1990 and 1994, and 56% of GDP between 1995 and 2000 (Christensen, 2004). From 2008 to 2017, Figure 4.1 indicates that the South African government increasingly met funding requirements through marketable debt (National Treasury, 2018a).

4.2.3.2 Foreign public debt trend in South Africa

While the evolution of domestic public debt in South Africa was so pronounced at the beginning of the 1970s, the growth of South Africa's foreign public debt dates back to the 1940s. According to Davies and Seventer (2004), South Africa's foreign borrowing increased after 1946 mainly due to its import-substitution industrialisation policies, and the country's extensive infrastructural development activities, especially in transport and energy sectors (Clark, 1994). Between 1946 and 1982, South Africa was the primary recipient of loans from the Bretton Woods institutions in sub-Saharan Africa (World Bank, 2001b; IMF, 2000). Additionally, the rising world interest rates and marginal new borrowings from a few private creditors contributed to the steady increase in foreign public debt stocks in South Africa in the 1970s and early 1980s (World Bank, 2018a; Clark, 1994).

In the post-apartheid era, 1994-2017, the new government's objective was to reduce the government's reliance on foreign loans in financing its budget requirements (GSA, 1994). The outcome of this policy directive was a progressive increase in foreign public debt denominated in Rands (SARB, 2014). The country's Public Finance Management Act of 1999 compelled the government to increasingly source its funding from the domestic market – an initiative which further reduced the overall government's reliance on foreign capital markets (GSA, 1999). During the review period, foreign loans came mostly from Development Financial Institutions (DFIs), and the loans came with a grace period for drawdowns ranging from two to five years (GSA, 2017). The relatively longer drawdown periods lessened the foreign currency risk of the South African government. In 2017, the total foreign currency-denominated debt (marketable and non-marketable) of national government amounted to R226 billion (or US$73.4 billion) as at 31 December 2017 (National Treasury, 2018b). Figure 4.2 shows the evolution of foreign public debt in South Africa from 1980 to 2017, expressed as a percentage of real GDP.

Figure 4.2: Foreign public debt trend in South Africa (1980-2017)



Source: Author's computation from World Bank (2018a)

As shown by Figure 4.2, foreign public debt constituted a tiny proportion of total government debt in South Africa, averaging 7.3% of real GDP between 1980 and 2017 (World Bank, 2018a). Although the proportion of foreign public debt on real GDP was rising gradually between 1980 and 1993 averaging R2.1 billion in Rand terms, in the post-apartheid era, the ratio was generally stable, averaging R2.2 billion in Rand terms (World Bank, 2018a, SARB, 2018).

On the economic growth front, the South African economy experienced eight recessions since 1960, with the last three being in 1991/92, 1997/98 and 2008/09 fiscal years (GSA, 2010; 1999; 1994). These recessions were mainly a result of spill-over effects of global economic crises. South Africa's GDP growth rate averaged 2.3% between 1975 and 2017, reaching a period high of 6.4% in 1980 (World Bank, 2018a). Also, South Africa generally experienced two distinct economic growth phases; 1980 to 1992 and 1993 to 2017. In phase one, 1980-1992, economic growth rates were not impressive – this was against a background of intensified international economic and financial sanctions on the apartheid regime which dried up funding for new state projects, increased political uncertainty, and massive decline in foreign direct investment inflows (World Bank, 2018a; Clark, 1994). The economic growth rates during the period 1980-1992, were thus moderate, spiking around 2.1% of GDP – with

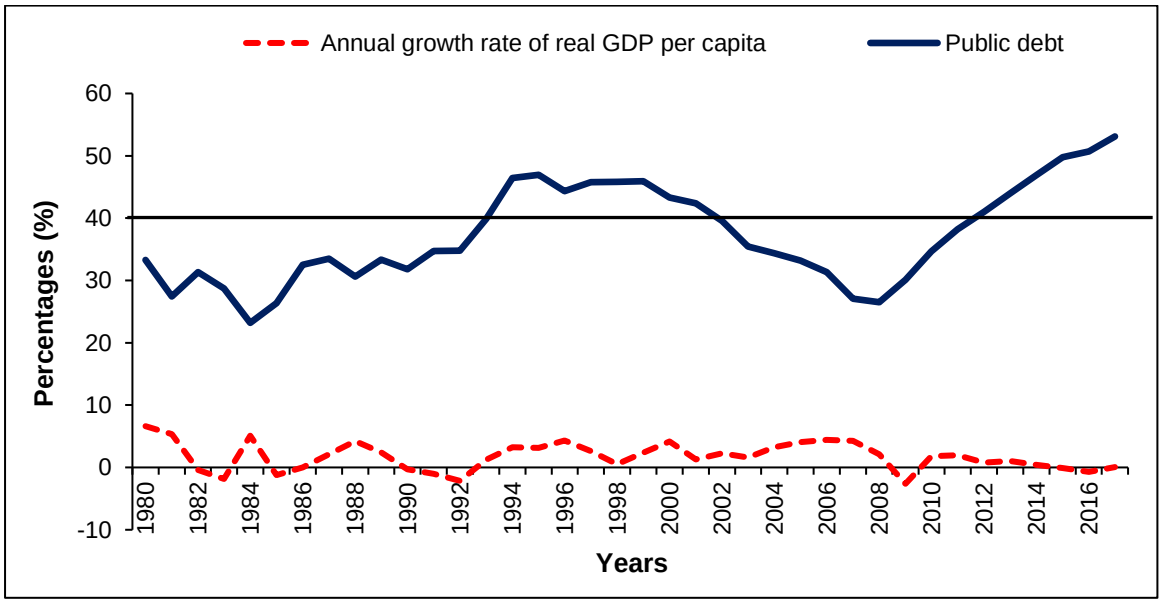
swings reaching a period low of a negative 1.8% in 1983 and a period high of about 5.1% in 1984.

From 1993, economic growth rates steadily increased, reaching a peak of about 4.4% in 2006 and then declined again to a negative 2.6% in 2009. Economic growth recovered to about 1.8% in 2010, but since then, the country has had a negative growth trajectory up to 2017. Overall, after 1994, the South African economy made a remarkable economic rebound following the adoption of stern structural policies, which stressed among other things, trade liberalisation, removal of discriminatory labour policies and practices, restructuring and privatisation of some state-owned businesses, sectoral deregulation and real exchange rate stabilisation (World Bank, 2018a; 2001b). Most of these economic and financial reforms were embedded in the country's Reconstruction and Development Programme (RDP) of 1994; Growth, Employment and Redistribution (GEAR) policy of 1996, the Accelerated and Shared Growth Initiative for South Africa (ASGISA) of 2006, the New Growth Path (NGP) of 2010, the National Development Plan of 2011 and the Medium-Term Strategic Framework of 2014 (GSA, 2014b; 2011; 2010; 2007; 1994; The Presidency, 2006).

The ASGISA policy was an extension of the GEAR programme aimed to make government expenditure more effective in achieving social goals (The Presidency, 2006). Following these economic reforms, the South African government increased its allocation of funds to public enterprises for investments in various economic infrastructures and to increase participation by the private sector in the economic development of the country. In the main, the country's 1994-2017 economic philosophy prompted a rise in industrial and trade activities, and hence an overall positive economic growth rate (National Treasury, 2019; GSA, 2014a; 2010).

Figure 4.3 presents the trends in public debt and economic growth in South Africa between 1980 and 2017. Public debt is expressed as a percentage of RGDP, while economic growth is measured by the annual growth rate of real GDP per capita.

Figure 4.3: Public debt and economic growth trends in South Africa (1980-2017)



Source: Author's computation from World Bank (2018a)

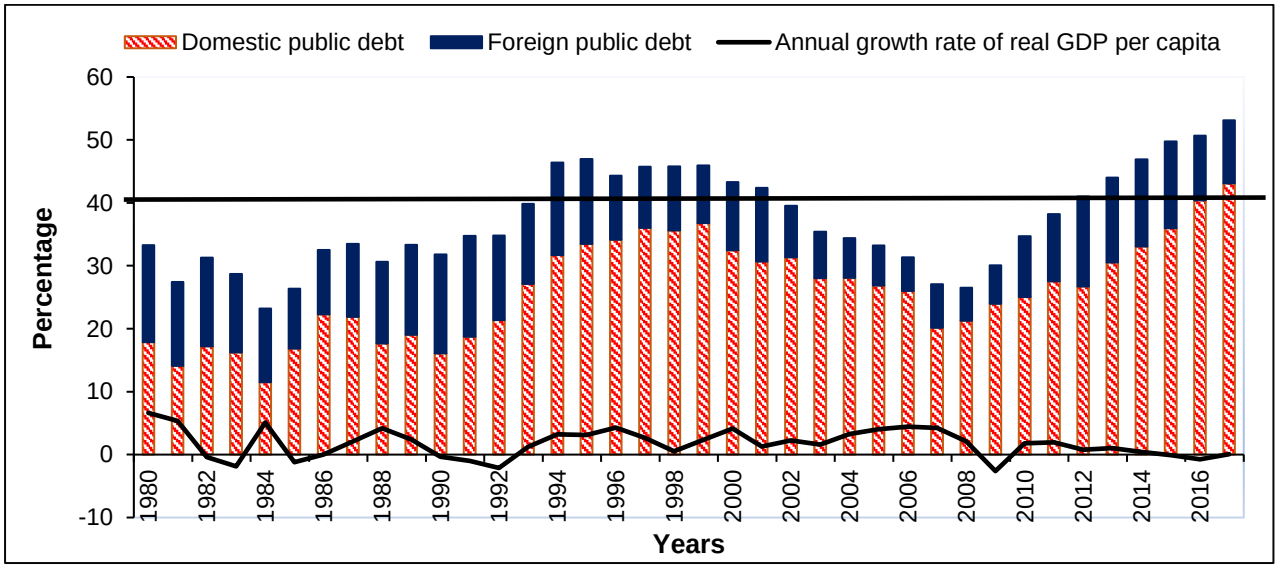
Figure 4.3 shows three distinct phases in the evolution of public debt in South Africa, that is, 1980-1994, 1995-2008 and 2009-2017. Generally, between 1984 and 1994 public debt/RGDP per capita ratio maintained an upward trajectory, mainly from rising fiscal deficits, which reached a period peak of 47% in 1994 (Statistics South Africa, 2017). A marked decrease followed this in the public debt/RGDP per capita ratio during the period from 1995 to 2008.

As Figure 4.3 illustrates, between 1993 and 2001, South Africa was in public debt distress, a condition which prompted the country to continue restructuring financially and economically. These reforms facilitated the reduction in budget deficits and promoted remarkable economic growth rates, resulting in the downward trend of the public debt to real GDP ratio displayed in Figure 4.3; reaching a period low of 25.9% in 2008 (World Bank, 2018a). Also, during this phase, 1995-2008, there was a massive industrialisation drive, which assisted the economic diversification of this economy (AfDB *et al.,* 2017).

In the last phase, 2009-2017, there is a noticeable upward trend in the public debt/RGDP per capita ratio, which can be attributed to the tail-effects of the 2008 global financial crisis and introduction of new government debt instruments (Statistics South Africa, 2017; National Treasury, 2012a; 2012b). Figure 4.4 gives a pictorial view

of the composition of public debt in South Africa between 1980 and 2017, expressed as a ratio of real GDP.

Figure 4.4: Domestic, foreign public debt and economic growth in South Africa (1980-2017)



Source: Author's computation from SARB (2018); World Bank (2018a)

As portrayed in Figure 4.4, the government of South Africa relied predominantly on the domestic capital markets to finance its budget needs. Domestic public debt constitutes a major part of the total public debt, while the share of foreign public debt in the total public debt has, on average, declined over time. In the period between 1995 and 2001, the decrease in public debt/RGDP per capita ratio was a result of the government's drive to reduce the foreign debt component and also from the overall growth of the economy, as shown in Figure 4.4 (World Bank, 2018a). The blending of a comprehensive basket of government securities and attractive interest rates has added to the broadening of the country's investor base (National Treasury, 2016b; 2016b; 2016c). Figure 4.4 also shows that South Africa breached the IMF and World Bank public debt indicative threshold of 40% between 1993 and 2002, and 2012 and 2017 – caused by an exponential growth in domestic public debt that reached 43.1% in 2017 (National Treasury, 2018b).

4.2.4 Challenges facing public debt management in South Africa

In the period 1970-1993, public sector debt in South Africa grew because of several factors, including widening fiscal deficits and deteriorating current account imbalances (Lowenberg, 1997). During this period, South Africa had no institutional and legal framework to promote effective public debt management, and the country's coordination of both monetary and fiscal policy was generally fragmented (Nattrass & Ardington, 1990). As a result, there was an exponential accumulation of public debt, both domestic and foreign, until it reached unsustainable levels in 1985 (Hirsch, 2005). The international economic and financial sanctions instituted against the apartheid regime further compounded the situation by compelling the government to borrow excessively, both domestically and externally on a non-concessional basis to meet rising budgetary demands (Clark, 1994; GSA, 1994).

Initially, prior to the establishment of the ALM division in 1996, the management of both public debt, domestic and foreign, and government's financial assets was highly fragmented (Wheeler, 2004: 65). According to Wheeler (2004), the central bank of South Africa was responsible for foreign currency borrowing, and the Department of Finance had little input into these decisions. However, after the borrowing, the Department of Finance was constitutionally mandated with the management of the foreign currency loans, while the responsibility for managing the government's cash was spread across several state agencies (Wheeler, 2004). The disintegration in the public debt contraction and management processes contributed to the unabated rise in the government debt stock in the 1990s.

Additional public debt management challenges in South Africa stemmed from (1) the lack of proper coordination of government-guaranteed debt to state-owned entities; (2) limited understanding of the full nature of the government's asset and liability portfolios; and (3) an uncoordinated method of accessing financial markets, both domestic and foreign, by the government (Wheeler, 2004; IMF & World Bank, 2003). Furthermore, the period from 1950 to 1980 is notable for undeveloped secondary debt markets, and the government relied heavily on limited short-term debt instruments (Hirsch, 2005). The government debt securities were illiquid, resulting in high costs of raising government finances (Hirsch, 2005: 38-41). Hirsch (2005) added that public sector financing and expenditure procedures lacked transparency and financial

discipline, further adding to rising fiscal imbalances and costly short-term state borrowings. Thus, the high proportion of short-term maturity domestic public debt profile caused the government to experience severe liquidity problems in the 1980s (SARB, 1998).

Other factors that triggered domestic public debt management challenges, particularly between 1980 and 1994, were economic growth sluggishness and massive capital outflow (National Treasury, 1995; 1994). From 1980 to 1993, overall investment in South Africa contracted by an average of 3.1% annually (National Treasury, 1995; 1994). With restricted revenue flows, the fiscal deficit went up to 7.8% of GDP in 1993 (Statistics South Africa, 2017). Constrained by poor revenue performance, the South African government reverted to domestic debt markets to increase its fiscal space, hence the exponential growth in domestic public indebtedness during this period. The need to balance fiscal demands and the lack of stringent statutory debt control frameworks caused a continuous rise in the overall public sector indebtedness, reaching a debt standstill in 1985 (National Treasury, 1995; Leap, 1991). As a result of the public debt standstill, there was a deliberate policy by the South African government to stall the Prescribed Asset Requirement act of 1958 and to start instituting minimum debt consolidation mechanisms (Financial and Fiscal Commission, 2015).

From 1994, domestic public debt management challenges were mainly associated with the lack of legal state borrowing statutes for local governments, whose debt was mostly guaranteed by the central government (IMF, 2005d). Other factors which contributed to public debt management difficulties in South Africa between 1994 and 2017 are: (1) budgeted and unbudgeted bailouts to state-owned businesses, such as the Eskom, the South African Broadcasting Corporation, the South African Post Office, South African Airways, and the South African National Roads Agency, among others; (2) unreported deferred funding through public-private partnerships; and (3) unreported unconventional debt instruments for addressing losses in state-owned businesses (Financial and Fiscal Commission, 2015; IMF, 2005d; National Treasury, 1995).

Contrary to Zambia and Zimbabwe, after political independence in 1994, there was deliberate action by the South African government to actively institute economic and

financial reforms to provide for sound public debt management and promote macroeconomic stability. The reforms led to (1) the deepening of domestic debt markets, with the establishment of domestic capital markets; (2) the establishment of public finance and public debt management laws and institutional frameworks; and (3) the setting up of public debt analysis frameworks (National Treasury, 2012a; 2012b; 1996). A combination of these factors led to the:

(1) containment of domestic and foreign public debt to within sustainable levels;
(2) increase in foreign and domestic investment, averaging 4.7% annually between 1994 and 2003, with the capital account recording a cumulative amount of R169.6 billion by 2003;
(3) establishment of a semi-autonomous Reserve Bank of South Africa;
(4) establishment of the BESA in 1996;
(5) spreading of the government's domestic debt maturity profile; and
(6) development of deep domestic money and capital markets (National Treasury, 2018a; 2016b; 2014b; 2012a; 2012b; 1996; SARB, 2018; GSA, 1998).

Thus, unlike Zambia and Zimbabwe, South Africa adheres to its public debt management principles, making the country one of the few African economies with a well-structured government debt portfolio (Ecorys, 2008). According to proper public debt management principles, the country also instituted constitutional-based fiscal reforms. These fiscal reforms eliminated some public debt management challenges by containing government spending at all levels using the multi-year budgeting system – making government expenditures more transparent and accountable (Farell & Todani, 2004). Effective public debt management in South Africa has also been brought about by the adoption of a three-year fiscal framework which enhanced the matching of revenue and expenditure outturns (National Treasury, 2003). According to the National Treasury (2003), improved revenue forecasting techniques since 2000 also curtailed the country's budget imbalances.

More so, under public sector financial discipline and accountability, the government publicises an annual debt management report, specifying the public sector's annual borrowing requirements (National Treasury, 2012a). The debt report provides comprehensive details on the state's debt levels, public debt composition and structure and size of issues, auction dates, public debt instruments issued and to be issued,

and their respective price trends, as well as the associated public debt repayment costs (National Treasury, 2012a; 2012b).

The other element which makes South Africa's public debt management practices distinctive from Zambia and Zimbabwe is that of effective collaboration with international organisations in promoting public debt management. For instance, in 2011, the National Treasury and OECD mutual agreed to foster sound public debt management policies, as well as facilitate the development of domestic debt markets in South Africa (National Treasury, 2012a). The government also partnered with the World Bank Treasury and the Swiss Secretariat of Economic Affairs under the World Bank's Government Debt and Risk Management Programme (GDRM) to develop a new architecture for the secondary debt market to boost liquidity and price discovery of government securities (World Bank, 2014b). Also, the enactment of several legal debt statutes, such as the Public Audit Act of 2004, which compels the government to undertake annual financial audits at all levels of government and in state-owned enterprises, culminated into reduced public sector borrowing requirements.

In conclusion, unlike Zambia and Zimbabwe, South Africa is currently perfectly aligned with international capital markets, which makes it possible to borrow at reasonable rates. Also, the international demand for South African debt instruments has remained strong since 2012 (National Treasury, 2018a). Prudent fiscal policy decisions and growth in the government's contingency reserve have helped to enhance the government's capacity to manage financial, public debt and economic risks. More so, unlike Zimbabwe, but much like Zambia, improved policy certainty in South Africa, along with sound economic reforms, will further support fiscal consolidation and effective public debt management.

4.3 The dynamics of public debt service in South Africa

4.3.1 The evolution of public debt service in South Africa

The evolution of public debt service in South Africa dates to the 1940s when the state used to rely extensively on loans from the World Bank, IMF and other world governments and private financial institutions (Davies & Seventer, 2004). Since then, the country has made consistent debt repayments to its domestic and international

creditors (National Treasury, 2018a; World Bank, 2018a; SARB, 2018; GSA, 1994; Clark, 1994).

Similar to other Southern African countries, such as Zambia and Zimbabwe, South Africa's public debt repayments were vulnerable to fluctuations in commodity prices, movements in exchange rates, maturity profile of domestic debt instruments, world interest rate volatilities, among other factors (National Treasury, 2018a; World Bank, 2018a; GSA, 2014a). The rising public debt service costs in the early 1990s and the subsequent reduction in economic growth rates forced the government to undertake restrictive demand management policies, as well as expansionary investment policies to enhance the country's capacity to honour its growing public debt repayment obligations, both domestic and foreign (GSA, 2014a; Nattrass & Ardington, 1990). The economic crises of 1997/98 and 2008/09 further worsened public debt servicing burden in South Africa (National Treasury, 2012a).

Owing to escalating public debt servicing costs, the South African government in 1994 entered into several economic and financial partnerships with international development partners (National Treasury, 2012a; 1998; 1994). The primary objective of the agreements was to seek public debt relief and rescheduling, principally the inherited foreign public debt (National Treasury, 2012a; 2003). Contrary to Zambia, but similar to Zimbabwe, South Africa was not a recipient of foreign public debt relief from its creditors. Thus, since 1994, the government of South Africa has focused much on reducing and maintaining sustainable levels of public debt stock (domestic and foreign) and minimising public debt repayments costs (National Treasury, 2019; 2018a). The government's deliberate policy direction of restricting the growth of foreign public debt and actively controlling the debt maturity profile was to limit and lessen the associated public debt interest costs, and also broaden the fiscal space of the government (GSA, 2014a).

The devaluations in Rand against the country's major creditor country currencies, especially between 1993 and 1996, further increased the foreign public debt repayment burden (SARB, 2004). Annual public debt payments of around US$1.5 billion between 1993 and 1998 and US$2.6 billion between 1997 and 2001 made the country prone to BOP crises and growth in domestic public debt stocks in a bid to

cover foreign public debt repayments and also finance the central government budget needs (IMF, 2005d).

4.3.2 Public debt service reforms in South Africa

Growing public debt repayment obligations from decades-long debt collection put pressure on the government's ability to fund public sector investments and expand social welfare programmes (National Treasury, 2019). As with Zambia and Zimbabwe, the cost of servicing government debt in South Africa was mostly an outcome of the size of public debt stock; new loans; and various macroeconomic variables, such as domestic and world interest rates, inflation rates and exchange rates (National Treasury, 2019; IMF, 2005d).

Initially from the 1960s, South Africa had accumulated enormous domestic and foreign debt, and the burden of debt service became an obstacle to the country's economic growth in the 1980s and 1990s (Calitz *et al.,* 2010). Conscious of the rising debt stocks and a shrinking revenue base, the South African government in 1994 undertook numerous fiscal, financial and debt reforms designed to promote macroeconomic and financial stability. In this regard, statutory instruments intended to control rising fiscal deficits and promote prudent financial management frameworks were implemented between 1994 and 2017 (National Treasury, 2018a; 2012a; GSA, 2001).

For instance, in 1995, the country formulated the State Debt Management Committee responsible for the planning, control and management of public debt on an ongoing basis (National Treasury, 1995). The committee's responsibilities included the developing of an effective public debt maturity profile, continuously improving government debt composition and reducing other debt related expenses, such as interest rates (National Treasury, 1995).

In common with Zambia and Zimbabwe, the public debt service reforms in South Africa focused mostly on establishing stringent revenue collection initiatives and improving revenue collection; broadening the country's tax base; creating new government debt management principles and new institutional arrangements; restructuring of government debt securities; establishing legal and regulatory frameworks that enhance budget credibility and transparency; reducing budget deficits by cutting on

recurrent expenditures; as well as economic growth reforms. More so, to strengthen oversight and minimise the risk posed by contingency liabilities, the government of South Africa with the World Bank worked to enhance public debt assessment approaches (National Treasury, 2019).

From 1994, the government of South Africa enacted new institutional arrangements which included the establishment of the Debt Management Office, SARS, Fiscal and Financial Commission, and Asset and Liability Management (ALM) (GSA, 2001; 1999). The Debt Management Office of the National Treasury of South Africa was mandated to assess government debt repayment ability through undertaking consistent annual debt sustainability analyses, annual financial risk assessments, establishing public debt risk benchmarks, as well as making public debt portfolio projections (National Treasury, 2003). These institutional reforms were further strengthened by the enactment of the Public Finance Management Act in 1999 and the development of accurate debt recording and reporting systems (National Treasury, 2006). Also, the disposal of certain state assets between 1994 and 1995 enabled public debt and associated interest costs to be reduced (National Treasury, 1995).

To restrict rising contingency liabilities and mounting domestic public debt service repayments costs from public entities and public-private partnerships, the government increased its supervision of the commitments that may give rise to financial and fiscal obligations in future (Parliament of South Africa, 2011). These obligations include guarantees to state-owned businesses, underfunding of social security funds, guarantees to both independent power producers and public-private partnerships with the risk being of default and callability. The measures taken by the central government to administer debt from affiliated organisations included:

(1) monitoring of borrowing plans and debt maturity profiles of the central government and state-owned entities;
(2) enforcing stringent regulatory frameworks, such as the compilation of a treasury best practice manual;
(3) setting up of maximum borrowing restrictions on all government levels and public entities; and
(4) managing contingent liability exposure (National Treasury, 2016b; 2016c; GSA, 2014a; GSA, 1999).

Other domestic public debt service control measures included the regular publication of outstanding stock and composition of central government debt liabilities, the publication of loan guarantees and other contingent liabilities, including currency denomination, maturity, and interest rate structure (GSA, 2014a).

Further, after 1994, the government instituted a public debt portfolio and funding strategy to limit government debt service costs, both domestic and foreign. The adopted funding strategy included the establishment of fixed and floating rate domestic debt ratio, lengthening of government debt instruments and establishment of switch and buy-back programmes, all of which fostered proper management of the government debt maturity profile (SARB, 2006). The setting of a fixed and floating rate domestic debt ratio minimised the South African government budget exposure to changing economic growth and financial market conditions and reduced variations in the country's creditworthiness when refinancing the debt.

From 2012, the government established an expenditure ceiling target, a nominal limit on federal budget non-interest expenditure (National Treasury, 2013). For instance, the government announced a spending limit of R1.03 trillion, R1.11 trillion and R1.18 trillion in 2014/15, in 2015/16 and 2016/17, respectively (National Treasury, 2017). The objective of putting government spending parameters in place was to restrain rising fiscal deficits and foster a considerable reduction in mounting domestic public debt service obligations (National Treasury, 2018a; 2017; 2016b; 2016c; 2015). Additionally, after 2000, the government of South Africa increased transparency and simplicity in domestic public debt management operations and designing government debt instruments with the prime goal of lowering transaction costs, reducing uncertainty among investors, diversifying the investor base and reducing debt servicing costs (National Treasury, 2012a).

Foreign public debt service reforms since 1960 have mainly focused on diversifying maturity periods of foreign debt instruments and the establishment of liquid benchmark bonds across the yield curve (SARB, 2013). The benchmark exercise recommended a net foreign currency exposure of 15%, comprised of foreign currency debt and foreign exchange reserves (National Treasury, 2012a; 2012b). To reduce risks associated with transacting swaps, the government between 2001 and 2011 replaced duration targets with foreign debt portfolio risk benchmarks of between 20% and 25%

of total government debt (National Treasury, 2012a). By establishing targets and ranges for foreign debt portfolios – to guide borrowing activities and other government debt transactions – the South African government maintained sustainable foreign public debt repayment structures from 2001 (GSA, 2011). In 2015, for instance, the foreign public debt risk was 10.5% against a benchmark range of 20% to 25% of GDP (SARB, 2016).

From 2012, the government began to carry out risk benchmarks using the World Bank's GDRM (National Treasury, 2014d). Overall, the post-1994 foreign public debt service reforms helped the South African government to keep objective sustainable budget balances and record favourable economic growth rates, as well as improve the country's public debt repayment capability.

Unlike Zimbabwe, the application and adherence to the above public debt repayment reforms led to the following:

(1) a remarkable decline in budget deficits as a percentage of GDP since 1994;
(2) substantial reduction in public debt repayment costs since 1999;
(3) a notable increase in government funding instruments diversification;
(4) distinguishable smooth public debt redemption profile of domestic debt securities;
(5) significant increase in sovereign credit ratings; as well as
(6) considerable increase in access to cheap credit for the public and private sectors (National Treasury, 2019; 2014a; 2014b; SARB, 2018; 2006).

Therefore, the prudent public debt service management reforms, together with sound economic policies, created the required fiscal space and minimised the country's susceptibility to contagion and financial risk (IMF, 2014d). The robust government debt service portfolio placed South Africa in a better position to effectively implement counter-cyclical fiscal policy initiatives and manage financial crises.

4.3.3 Public debt service and economic growth trends in South Africa

The trends in public debt service repayments in South Africa during the study period are largely influenced by the overall size, structure and composition of public debt; the rate of new government borrowings; the general economic performance of the country;

and the fluctuations in market variables such as interest, exchange and inflation rates (National Treasury, 2019; IMF, 2005d). According to the National Treasury (2019: 67), the public debt service cost of South Africa will in the next three years to 2021 take up over 62% of total government revenue (IMF, 2018: 50). Public debt service costs in South Africa rose to approximately R163.2 billion (or 3.5% of GDP) in 2017/18 and anticipated to further rise to R213.9 billion (or 3.7% of GDP) in 2020/21 (National Treasury, 2018b: 81). From 2010, public debt service costs were the fastest-growing spending category of the government, reflecting the increase in the stock of public debt, mostly the domestic component (National Treasury, 2018b). Higher treasury bill and government bond trading and increased contraction of bridging finance increased short-term borrowing costs between 2000 and 2017 (National Treasury, 2018b).

Prior to 1990, the interest due each year on the accrued public debt, both domestic and foreign, constituted a significant category of recurrent government expenditure and represented a first statutory claim on state revenues (National Treasury, 1994). For instance, according to the AFRODAD (2005), South Africa paid approximately US$1.7 billion towards foreign public debt by 1990, and about US$300 million bonds, denominated in Deutsche Marks and Swiss francs, were either rolled over or swapped in 1990. These public debt payments contributed to the marginal reduction in foreign public debt in that year (AFRODAD, 2015).

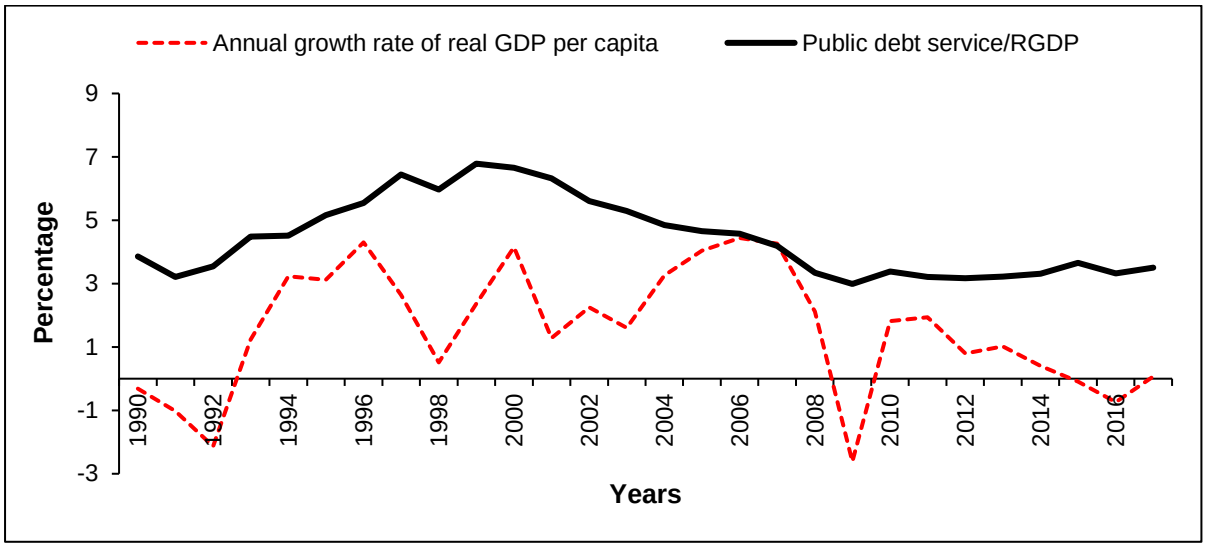
In February of 1994, the South African government paid US$500 million towards foreign debt, and during this period, the proportion of foreign public debt-to-GDP was around 3.4% (National Treasury, 1995). Although South Africa recorded a cumulative net capital inflow in excess of R8 billion by the end of 1994, the country contracted more foreign loans and domestic debt, which increased public debt repayments costs beginning 1999 (SARB, 2006). However, the adopted fiscal, financial and legal reforms since 1994 helped to contain public debt service costs after 1999 (National Treasury, 2016b; 2016c; 2012a). The prudent public debt service reforms focusing mostly on improving government debt management, in conjunction with robust economic growth rates, brought about considerable public savings owing to the spreading of the government debt maturity profile (National Treasury, 2012b; 2005).

From a macroeconomic-wide perspective, South Africa's economic growth experience changed from a long period of economic contraction in the 1970s until early 1990s, to

robust economic growth performances from 1994 until 2017 (World Bank, 2018a). The possible causes of economic decline in the 1970s and 1980s were trade, financial and political sanctions against the apartheid government, which culminated in higher inflation, increased economic uncertainty, declining investment and rising public debt levels (Faulkner & Loewald, 2008). During this period, pre-1994, the apartheid government instituted foreign exchange controls, which prevented capital flight (Faulkner & Loewald, 2008). In the same period, also, rising public sector spending, due to the government's effort to expand physical and social infrastructure, and subsidise many state-owned businesses, led to large fiscal deficits and mounting public sector debt service costs (Pitcher, 2012).

From 1994, the government focused on economic, social and financial consolidation, leading to the realisation of positive economic growth rates (World Bank, 2018b). The economic reforms in South Africa started with the implementation of the RDP in 1994 (GSA, 1994). The GEAR policy succeeded the RDP in 1996 focusing on macroeconomic stability (GSA, 1996). Contrary to the Zambian and Zimbabwean experiences, in South Africa, the more sustainable fiscal deficits and public policy consistency resulted in a steady increase in private sector investment in the post-apartheid period (World Bank, 2018b). In 2017, South Africa was the second-largest economy in Africa, after Nigeria (World Bank, 2018b). The South African economy is a regional manufacturing and financial hub – the most industrialised and diversified economy on the African continent (World Bank, 2018b). Figure 4.5 shows the trends in public debt service and economic growth in South Africa for the period 1990 to 2017.

Figure 4.5: Public debt service and economic growth trends in South Africa



Source: Author's computation from National Treasury (2018a; 2012a; 1994); World Bank (2018a)

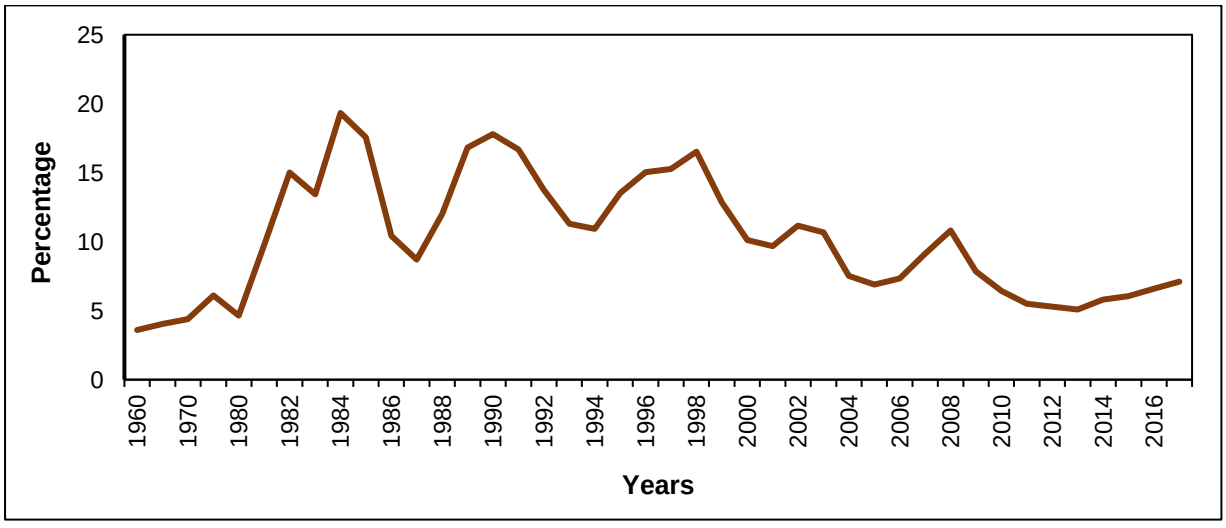
Figure 4.5 displays three distinct phases of public debt service in South Africa, 1990-1999, 2000-2009 and 2010-2017. The period 1990-1999 describes the period in which the public debt servicing costs grew dynamically along with the increase of public debt stock in South Africa. The build-up in public sector indebtedness prompted a rise in public debt service repayments, particularly on domestic debt (National Treasury, 2012a). The reduction in inflation rate between 1994 and 2005 and the accumulation in public debt, imposed a rising interest burden on the fiscus (IMF, 2005d; National Treasury, 1995). After hovering at between 10-15%, in the early 1990s, inflation progressively lowered to around 3% by mid-2005 (IMF, 2005d). The corresponding economic growth rates were not impressive during the period, oscillating around 1.4% with wide swings. Overall, economic growth rates were erratic from 1998 to 2003, with no distinct pattern.

In the second phase, 2000-2009, the country instituted several financial and economic reforms easing budget deficits and promoting remarkable economic growth rates. The implication was a downward trajectory in both the public debt to real GDP and public debt service to real GDP ratios, with the former reaching a period low of 2.9% in 2009 (World Bank, 2018a). Economic growth rates steadily recovered from the 2001 bottom of 1.2% to a peak of about 4.6% in 2006 but slid back again to a negative 2.6% in 2009 (World Bank, 2018a).

After years of fiscal consolidation in the late 1990s and early 2000s, the South African government in 2009 again embarked on expansionary fiscal policies in response to adverse economic and financial developments in the world economy (National Treasury, 2019; 2014b). Thus, during the period 2009 to 2017, public debt service costs rose steadily, averaging 3.3% between 2009 and 2017, but remained lower compared to 12.5% and 18% in most emerging market and advanced economies, respectively (World Bank, 2018a). According to the National Treasury (2016a), the rise in public debt payments after 2008 crowded out the government's allocations on productive activities, a condition which prompted the government to re-examine other fiscal measures to improve the fiscal position of the country continuously. It is worth noting that lower public debt servicing costs in the years 2011-2017, relative to the period from 1982 to 1998, were a result of radically low interest rates (World Bank, 2018a). In this last phase, economic growth rates steadily decreased from the 2011 high of 1.9% to a period low of negative 0.7% in 2016 (World Bank, 2018a).

The rise in public debt service costs from 2016 may have been caused by escalating treasury bill yields from multiple repurchase rate hikes by the central bank, deteriorating bond yields and a sharp depreciation of the South African Rand against major currencies in which foreign public debt was denominated (SARB, 2018; National Treasury, 2016b; 2016c). Figure 4.6 presents the average annual interest rates on government domestic debt securities in South Africa from 1960 to 2017.

Figure 4.6: Average annual interest rates on government domestic debt securities in South Africa (1960-2017)



Source: Author's computation from National Treasury (2018a); SARB (2018)

Figure 4.6 depicts a scenario in which interest rates were high between 1982 and 1998, averaging 14.3%. This period was associated with exogenous economic and financial shocks exacerbating the rise in both domestic interest rates and public debt service costs (SARB, 2006; National Treasury, 2003). The economic recession between 1989 and 1993 led to the sluggish growth in revenues than expenditures resulting in the rise in annual public sector borrowing requirement (National Treasury, 1995). Consequentially, there was surge in public debt stocks and repayment costs (National Treasury, 1995). For instance, in 1993/94, interest payments were nearly 17% of government expenditure (National Treasury, 1995).

In response to the rising public debt service costs, the government instituted numerous revenue reforms between 1996 and 1999, in addition to public debt service management reforms (SARB, 2006). The effect of these reforms culminated into a significant reduction in domestic interest rates, reaching 6.9% in 2005 from 16.5% in 1998 (SARB, 2006). The initiative of diversifying government debt instruments, beginning 2000, including the introduction of inflation-linked bonds across the yield curve, and the lengthening of public debt maturities, improved management of domestic interest rate, currency, and credit risks, and thus eliminated the net open forward position of the central bank (National Treasury, 2012a). The upward trend in interest rates after 2014 increased public debt service costs by 10.2% to R118 billion in the 2015/16 fiscal year, relative to R76.46 billion in 2011/12 (National Treasury, 2016b).

The rise in fiscal deficits recorded at the beginning of 2009 in Figure 4.6 is associated with rising public debt service costs between 2008/09 and 2015/16. The rise in public debt payments competed with the government's allocations on productive activities (National Treasury, 2016b). To guard against the crowding out influence of sovereign debt service burden on developmental programme spending, the government of South Africa increased the issuance of domestic public debt, especially after 2014 (National Treasury, 2016c). Despite the noted rise in public debt service costs in Figure 4.6, the proportion of public debt service payments to GDP remained relatively low compared to most African states (World Bank, 2018a).

4.3.4 Challenges facing public debt service management in South Africa

Unlike in Zambia and Zimbabwe, the problems of public debt service management in South Africa, both before and after 1994, are largely rooted in economic and developmental choices of the government in the 1970s, 1980s and 1990s. Additionally, as with Zambia and Zimbabwe, developments in the world economy also directly affected the movements in interest rates, demand for exports, levels of terms of trade and the inflows of investment and financial resources into South Africa (Frankel *et al.,* 2007; Du Plessis *et al.,* 2007; 2006). Other government debt repayment problems prior to 1994 emerged from a large proportion of short-term debt and massive capital flight, due to perceived political risk (Hirsch, 1989a; 1989b).

Other problems of public debt service in the pre-apartheid era originated mostly from subdued economic growth rates and depressed commodity demand and prices of the country's major exports. Following the international economic sanctions instituted against the apartheid regime in the mid-1980s, there was massive disinvestment and considerable withdrawal of foreign credit facilities, which exacerbated the cost of servicing both domestic and foreign financial commitments (Evennet, 2002).

As with Zambia and Zimbabwe, domestic public debt in South Africa in the 1980s until 2000 consisted mostly of short-term papers, which significantly increased rollover and market risk (SARB, 2013). During this period, interest rates were high, in both nominal and real terms, and the average maturity of the public debt portfolio was below ten years; about 60% of which required refinancing within five years (SARB, 2006). This also includes foreign commitments to the amount of R199 million. According to the IMF and World Bank (2003: 218), the high possibility of falling into a public debt service trap and increased uncertainty of potential liabilities in the mid-1990s, prompted the South African authorities to make a swift turn towards new prudent public debt service management practices.

Public debt service management challenges in South Africa after 1994 emanated from lack of sound borrowing and spending principles among the three levels of government, that is, federal, provincial and local; and the sluggishness in economic growth rates after 2014 (National Treasury, 2019; Ecorys, 2008). According to Ecorys (2008), the scope of the Public Expenditure and Financial Accountability Assessment,

for instance, was limited to the federal government, leaving out provincial governments and local authorities. However, these contributed significantly to the upsurge in public sector debt service commitments of the central government. The persistent decline in economic growth rates since 2014, relative to the projected rates, caused a significant contraction in fiscal space, and a rise in public debt stocks and servicing obligations (SARB, 2016). More so, the recent surge in world interest rates pushed up the cost of servicing public debt, especially the one denominated in foreign currency (World Bank, 2018a).

Contrary to the Zambian and Zimbabwean experiences, despite these government debt service challenges, sound fiscal and financial management reforms in South Africa drastically enhanced the public debt service management. Structural public debt service management improvements in South Africa included, among other things, the setting up of an effective legal framework and proper institutions responsible for public debt management, and also the introduction of risk management systems in the National Treasury (National Treasury, 2012a; 2012b; IMF & World, 2003: 217; GSA, 1999). For instance, to systematically administer government debt payments, the country in its Budget Reviews, stipulated the government debt management strategies to be followed, including its net borrowing targets over a three-year prospective timeframe (National Treasury, 2003). These projections provided detailed information on the breakdown of public debt, both domestic and foreign, maturity profiles and the respective repayment schedules.

For instance, the Debt Management Office of the National Treasury of South Africa undertakes annual debt sustainability analyses, risk assessments and risk benchmarks, as well as public debt portfolio projections. Further, the country, through the SARB, carries out and publishes annual public debt sustainability analysis reports on domestic and foreign debts. The undertaking of these aforementioned public debt monitoring, and control measures have helped to keep the country's public debt stocks and debt service levels within sustainable levels and reduce the risks of debt rollovers (SARB, 2016). In 2015, for instance, the foreign public debt was 10.5% against a risk benchmark range of 20% to 25% of GDP (SARB, 2016).

4.4 Conclusion

This chapter has discussed the growth dynamics of public debt, public debt service, both domestic and foreign, and economic growth in South Africa from 1960 to 2017. The analysis established that when the country was under pressure from intensified international economic sanctions in the 1970s and 1980s, the apartheid government adopted an inward-looking economic growth policy, financed largely from domestic borrowing. This gave rise to a massive increase in the domestic component of the public debt. During this period, growth in public debt was mainly driven by rising budget imbalances due to domestic and global financial crises, as well as growing public sector investment outlays.

Similar to Zambia and Zimbabwe, in the post-1994 period, the government undertook major public debt reforms which varied from institutional reforms and rearrangements to the enactment of new public finance and public debt management frameworks. The economic and financial reforms intended to reduce and maintain sustainable public debt levels and minimise the country's exposure to external economic and financial shocks. Following these reforms, there was a massive broadening of government debt instruments, extensions of public debt securities' maturity periods, increased participation of foreign players on government bonds, and intensive integration of cash and government debt management roles, among other changes – which is contrary to the Zambian and Zimbabwean experiences.

The chapter further revealed that the weakening terms of trade, especially between 1981 and 1993, and economic sanctions levied on South Africa by the international community in 1986, largely influenced the government debt service reforms, trends and public debt service challenges in this country. The major public debt service reforms mostly focused on improving the management of contingent liabilities and public sector efficiency, including the privatisation and restructuring of state-owned enterprises.

On the economic growth front, the chapter showed that there was a remarkable economic rebound from 1994 following the adoption of economic and financial policies, which stressed on, among other things, trade liberalisation, removal of discriminatory labour policies and practices, restructuring and privatisation of some

state-owned businesses, private sector growth driven initiatives, and real exchange rate stabilisation. Among the instituted economic policies were the RDP of 1994; GEAR policy of 1996; the ASGISA of 2006; the NGP of 2010; the National Development Plan of 2011; and the Medium-Term Strategic Framework of 2014.

CHAPTER FIVE

PUBLIC DEBT, PUBLIC DEBT SERVICE AND ECONOMIC GROWTH: THEORETICAL AND EMPIRICAL LITERATURE REVIEW

5.1 Introduction

This chapter focuses on the theoretical and empirical literature review on the relationship between public debt, public debt service and economic growth and consists of four sections. Section 5.2 reviews the theoretical underpinnings of the public debt-economic growth nexus. Section 5.3 examines the empirical literature on the impact of public debt, public debt service on economic growth and causality between the variables. Finally, Section 5.4 concludes the chapter.

5.2 Public debt and economic growth: A conceptual framework

The impact of government interventions on the economic growth process through public debt, taxation and public expenditures remain a significant economic policy issue in world economies since the 18th Century. Until now, there is no generally accepted position among policymakers and economists on fundamental questions regarding public debt, as outlined by Fetter:

> *. . . the parliamentary debate on the power of the purse was never ending: how much money should be extracted from the public, and of that how much should be borrowed and how much taken by taxation; what type of taxes should be used; for what purposes should the government spend money. Such issues have been at the heart of government since the beginning of organised society*
>
> (Fetter, 1980: 111).

Public debt refers to the financial commitments of the central government that arise mainly from debt securities, contracted loans, guaranteed loans and other contingent liabilities (Elmendorf & Mankiw, 1999). The IMF (2013) defined public debt as all the financial agreements by the national government to pay back to the creditors at a later date, comprised of both the initial amount and accumulated interests. Public debt

consists of domestic and foreign public debt. The distinction between domestic and foreign public debt depends particularly on the residence of debt holders, currency of the debt and whether issued on the international debt market or domestic debt market (Panizza, 2008). In this study, foreign (domestic) public debt is government debt owed to non-residents (residents) and regulated under the jurisdiction of the international (national) laws.

Similarly, the theoretical literature on economic growth has evolved from the 18th Century, developing from the simplest schematic models to sophisticated economic models and modelling techniques. The different schools of economic thought imposed their rationale towards either the free market or state-oriented economy; and differed in the variables of emphasis in the mechanisms of transmission to economic growth. There are three distinct economic growth theories identified, that is, classical, exogenous and endogenous.

The Classical economic growth theory originated from the work of Adam Smith in the 18th Century and Harrod-Domar in the 20th Century. According to Harrod (1939) and Smith (1776), savings are an important factor for economic growth and critical for capital formation, leading to higher labour productivity. Central to the Classical model is the perception that an economy's growth rate is dependent on the rate of capital accumulation, which is also reliant on the levels of saving and productivity of physical capital (Bell, 1992).

Unlike Smith (1776), Solow (1956), who pioneered the exogenous growth theory from the Cobb-Douglas production functions, emphasised the role played by capital and labour productivity in the economic growth process and treated technological progress as an endogenous variable (Solow, 1956). The dominant notion of Solow's theorem is that extensive capital build-up is required to keep the capital-labour relation constant (Solow, 1956). Lucas (1988) supported the neoclassical model by stressing the importance of human capital to growth.

There is yet another economic growth theory, the endogenous economic growth theory, which argues that long-run economic growth is inevitable when economies acquire extra capital through technical progress that continually enhances the marginal product of capital (Romer, 1986). According to the endogenous growth

theory, public debt can stimulate economic growth if the debt revenues are channelled towards appropriate high-return investments, such as human capital development, technical progress, research and development, among others (Romer, 1990). Romer (1990) added that the misuse of public revenues leads to severe negative impact on a nation's future economic growth process.

Theoretical views on the public debt-economic growth nexus are divided between those that maintain that there exist a negative, positive or nonlinear relationship between public debt, public debt service and economic growth, and those that support the neutrality hypothesis (no impact).

5.2.1 Theoretical literature consistent with the impact of public debt on economic growth

There are three theoretical views on the impact of public debt on economic growth, namely, negative, positive and nonlinear. The negative impact of public debt on economic growth is explained fundamentally by the debt overhang hypothesis. The debt overhang theory, as first postulated by Myers (1977), argues that accumulation of public debt, due to fiscal deterioration, distorts the possibilities for the private sector to make optimal future investment decisions. This theory is supported by some traditional growth models, predominantly in a neoclassical and endogenous setting, which argue that public borrowing reduces the financial discipline of the budget process, and increases future tax burden (Bowen *et al.,* 1960; Diamond, 1965; Modigliani, 1961; Buchanan, 1958; Meade, 1958).

Within the debt overhang hypothesis, there are three channels whereby public debt negatively affects economic growth – the rational expectation theory, crowding out theory and fiscal illusion hypothesis. The first channel is the rational expectation theory. It argues that the negative impact of public debt on economic growth springs from uncertain reaction to macroeconomic stabilisation policies by economic agents – following incessant budget deficits and government borrowings (Kremers, 1989). High public debt increases future policy uncertainty or leads to prospects of confiscation, possibly through inflation and financial repression (Plosser, 1982).

The second channel negatively relates to economic growth in terms of public debt is via the standard crowding out effect theory. One such avenue for crowding out is the Ricardian Equivalence. According to Seater (1993) and Barro (1989), increased private savings in anticipation of future taxes may completely crowd out current private sector consumption. Furthermore, government borrowing, arising from fiscal deterioration, reduces the lending capacity of the economy, leading to substantial rises in real interest rates with the effect of thwarting private sector investment, resulting in economic decline (Feldstein, 1988; 1982).

The second avenue in the crowding out theory through which public debt can be particularly deleterious to the economy is when market players have restricted access to credit (Feldstein, 1982). The crowding out effect of public debt on private investment can be either through prices (interest rate) or quantities (credit rationing) (Domar, 1944; Feldstein, 1982). Furthermore, this hypothesis argues that public debt, financed by either distortionary taxes or debt issuance, amplifies public policy uncertainty, which distorts decision making by private economic entities, prompting disinvestment (Hamilton and Flavin, 1986). According to Barro (1981), most investments in an uncertain economic environment are short-term, low risk, and with a quick return, with an overall effect of depressed long-run stable economic growth rates.

The third avenue in crowding out theory occurs within an investment/saving–liquidity market framework when the economy is below the full employment level, as in a Keynesian setting. In this context, current large deficits and expectation of large future deficits result in higher interest rates, and crowding out of borrowers for mortgages, corporate investment, and consumer spending in the credit market (Evans, 1985). The high interest rates make domestic government securities more attractive to foreign investors, pushing interest rates higher as the demand rises for domestic currency from abroad to buy local government securities (Evans, 1985). Accordingly, interest-sensitive components of private spending are crowded out by the fiscal expansion (Evans, 1985).

The final channel through which public debt and economic growth correlate negatively is the fiscal illusion theorem. According to Patinkin (1965), fiscal illusion arises when ill-advised taxpayers fail to realise the full weight of future taxes implied by the substitution of government debt for tax finance. Consequentially, Burbridge (1983)

argues that these economic agents erroneously perceive such a swap as increasing their net worth, thus, increase their current consumption at the expense of savings and investment, and hence, leading to depressed long-run economic growth rates.

Apart from the dominant negative relationships between public debt and economic growth, there is also specific theoretical literature supporting a positive relationship between public debt and economic growth. This theoretical view places the importance of public debt in the economic growth process of a country and is supported primarily by Wagner's hypothesis of "law of increasing state activity" and the Keynesian's fiscal multiplier effect. Wagner (1893) hypothesised that the increased relative size of the public sector leads to high public expenditures, mostly debt-financed, which then stimulate the level of economic development. Thus, in a restructuring state, the economic activities and functions of the government increase to meet the social, political, and cultural needs of the people (Bird, 1971).

Wagner (1911) further hypothesised that both the industrialisation and urbanisation processes tend to lead to greater demand for complex and expensive infrastructure development and social control. In other words, as societies move towards modernisation and urbanisation, there is a progressively greater quantity and multiplicity of public goods and services provided by the government (Wagner, 1911). Under these theoretical frameworks, government securities (public debt) function as liquid assets, and as they increase, effectively promote economic growth – through the liquidity supply effect (Wagner, 1911).

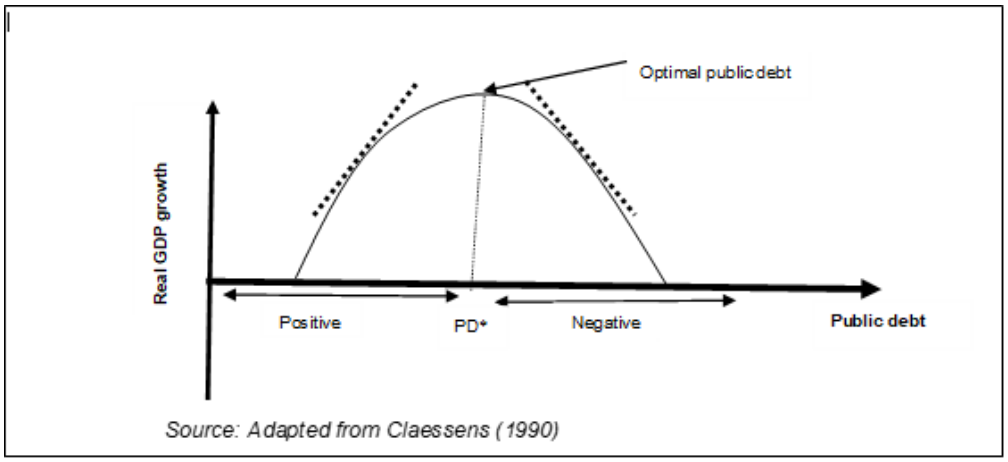
However, the Keynesian view proposes that the relationship between public debt and economic growth is positive. The theory asserts that rising public debt induces high levels of productive public spending, which then act as automatic stabilisers in the economy (Elmendorf & Mankiw, 1999). The Keynesian argument is that increased public sector spending (public debt) can stimulate domestic economic activity and crowds in private investment; this occurs if the public debt results from a steep decrease in capital tax rates or a substantial rise in public sector capital investments – both raise the net return to capital (Elmendorf & Mankiw, 1999). Furthermore, Delong and Summers (1991) state that deficit-financed government spending has a more positive multiplier effect on the economy than tax-financed government spending.

Outside the theories discussed above, there is another theory that validates the existence of a nonlinear relationship between public debt and economic growth. According to the nonlinear or threshold effect theory, the contribution of public debt to economic growth is theorised as positive at lower levels and negative at higher levels of public debt (Sachs, 1989; Krugman, 1988). Krugman (1988) maintains that when public debt is below a certain threshold, the crowding in effect of government dominates the crowding out effect, such that increases in public debt promote economic growth.

Krugman (1988) further submits that economic growth only occurs when rising productive public spending replaces the reduction in private spending. However, he contends that beyond a specific threshold, the crowding out effect occurs because government borrowings to finance fiscal deficit reduces available loanable funds to the private sector, resulting in gross national investment decline.

Similarly, Sachs (1989) maintains that lower levels of public debt stimulate economic growth, but beyond a certain limit, high levels of government debt increase economic uncertainties through expected future tax increases. He argues that the resultant economic uncertainties cause retarded investment and consumption, less employment, and lower output growth rates – the crowding out effect. This nonlinear relationship between public debt and economic growth is represented by the following diagram (Figure 5.1), which was initially formulated by Krugman (1988):

Figure 5.1: Bell-shaped public debt-economic growth relationship



Source: Adapted from Claessens (1990)

5.2.2 Theoretical literature consistent with the neutrality (no impact) of public debt on economic growth

David Ricardo (1817) first introduced the concept of public debt neutrality, stating that the real economy is independent of the government's choice of raising revenue – either through taxes or debt issuance. David Ricardo's view on public debt and its impact on resource allocation and economic growth generally dates back to 1820 and 1877 in his writings entitled the "Funding System" and "On the Principles of Political Economy and Taxation", respectively. Barro, in 1974, highlighted Ricardo's supposition in his article "Are Government Bonds Net Wealth?", and Buchanan in 1976, in his article "Is the public debt equivalent to taxation?", sparking animated debates in economic policy circles on the relationship between public debt and economic growth. In 1976, Buchanan dubbed Ricardo's theorem of the 19th Century and Barro's proposition regarding the equivalence between taxes and government debt as the "Ricardian Equivalence" (Buchanan, 1976), referred to in some literature as the Barro-Ricardo Equivalence Hypothesis.

The Ricardian Equivalence Hypothesis (REH) supports the nonexistence of any economic relationship between public debt − domestic and foreign − and economic growth (Barro, 1989). That is, as long as solvency is not an issue, government debt simply explains the movement of financial resources among economic agents, with no alterations on real macroeconomic variables (Barro, 1989). Further, the REH assumes that public debt only has a direct impact on private consumption and savings decisions, without leading to a net economic growth prospect (Churchman, 2001).

The theoretical foundations of the Ricardian Equivalence Hypothesis are that:

(1) capital markets are perfect − thus, the credit environment allows economic agents to borrow without restriction against future incomes;
(2) population growth (taxpayers) is constant;
(3) economic agents are rational and have perfect foresight of the future − that is, consumption decisions are rationally based on permanent income and life cycle frameworks;

(4) there is an infinite time horizon with intergenerational transfers − altruistic agents regard their heirs as extensions of themselves, that is, the theorem assumes infinitely lived agents (overlapping generations);
(5) the future tax burden to service government debt is fully borne by those who benefit from the initial tax cut;
(6) there is behaviour optimisation; and that
(7) there are non-distortionary taxes (Barro, 1989; 1974; Buchanan & Roback, 1987).

If the above assumptions hold, then shifts in both taxes and fiscal deficits today is met by an equal adjustment in private savings to neutralise movements in public savings (Elmendorf & Mankiw, 1999). A decrease in government savings due to higher budget deficits (which are debt-financed) is wholly offsetted by an increase in private savings (Barro, 1989). Consequentially, the decrease in public savings does not result in a lower gross investment. In other words, in a perfectly competitive setting, both tax and government debt obligations are a function of the agents' motive to borrow and their ability to repay the debts, with public debt being purely indeterminate (Barro, 1989; 1979).

5.3 Public debt and economic growth: Empirical literature review

To discuss the relationship between public debt, public debt service and economic growth, this section consists of two subsections, namely; subsection 5.3.1 which examines the empirical literature consistent with the impact of public debt, public debt service on economic growth; and subsection 5.3.2 which focuses on the empirical literature consistent with the causality between public debt, public debt service and economic growth.

5.3.1 Studies consistent with the impact of public debt, public debt service on economic growth

There is a substantial body of empirical studies that supports the hypothesis that public debt negatively affects economic growth. These studies include, among others, Gómez-Puig and Sosvilla-Rivero (2018), Akram (2016), and Woo and Kumar (2015).

Mhlaba and Phiri (2019) examined the impact of public debt on economic growth in South Africa using two data samples, that is, 2002-2016, and 2007-2016. Employing the ARDL model, the evidence supported a negative relationship between public debt and economic growth, irrespective of whether the analysis was in the short or long run.

Gómez-Puig and Sosvilla-Rivero (2018) investigated the impact of public debt on economic growth in 11 countries drawn from both central and peripheral countries of the European area covering the period 1961 to 2013. The analyses were based on a log-linearised Cobb-Douglas production function augmented with the ARDL testing approach to cointegration. Using annual time-series data, the authors found evidence consistent with the negative impact of public debt on economic growth in the long run in studied European countries.

In 2016, Akram examined the impact of public debt (domestic and foreign) on economic growth and poverty in four selected South Asian countries, that is, Bangladesh, India, Pakistan and Sri Lanka, covering the period 1975 to 2010. Akram's (2016) work using the standard panel data estimation methodology, revealed that public debt and economic growth relates negatively to these economies. However, the comparable impact of domestic and foreign public debt on economic growth differed across the study countries. Overall, his results showed that domestic public debt had a positive impact on economic growth, while the foreign public debt had either a negative or no impact on economic growth in studied economies.

Focusing on both developing and developed countries, Ahlborn and Schweickert (2016) tested the public debt-economic growth relationship taking into cognisance differences in economic systems. Using a sample of 111 OECD and developing countries for eight 5-year periods from 1970 to 2010, they concluded that the link between public debt and economic growth varies considerably across countries due to the degree of fiscal uncertainty brought about by each economic system. After employing varying methodologies, including fixed-time effects, random effects, pooled ordinary least squares and two-stage least squares, Ahlborn and Schweickert (2016) stated that public debt has a stronger negative impact on growth in continental countries than in liberal countries; and the debt-growth relationship is neutral or positive in nomadic countries.

Egert (2015) analysed the relationship between public debt and economic growth in 20 advanced economies from 1946 to 2009 using the traditional linear model with thresholds at 30%, 60%, and 90%. Egert's (2015) linear estimation results reported a negative relationship between public debt and economic growth but did not establish any evidence supporting the threshold effect. More specifically, Egert (2015) found that a 10% increase in government debt causes a decline of between 0.1% to 0.2% in economic growth in these economies.

Woo and Kumar (2015) investigated the impact of aggregate public debt on annual growth of real GDP per capita in a panel of 78 countries (38 advanced and emerging economies, and 41 developing economies) for the period 1970 – 2008. The control variables in the models were human capital, government size, trade openness, financial depth, fiscal deficit, inflation and terms of trade. By employing several econometric techniques, that is, pooled OLS, robust regression, between estimator, fixed effects panel regression and system GMM dynamic panel regression, the authors found evidence that strongly suggests a negative relationship between aggregate public debt and economic growth. Explicitly, a 10% point increase in the initial debt-to-GDP ratio was associated with a decline in real per capita GDP growth of around 0.2% points per annum, with the impact being slightly smaller in advanced economies (Woo & Kumar, 2015).

Greiner (2014) examined the relationship between public debt and economic growth in industrialised countries and found that high levels of public debt lower the steady economic growth rate. Furthermore, in cases of permanent fiscal deficits that government debt grows at the same rate as other economic variables; therefore, the association between public debt and economic growth becomes complex (Greiner, 2012).

Panizza and Presbitero (2014) studied the relationship between public debt and economic growth in a sample of OECD countries between 1980 and 2005. They used an instrumental variable approach, and the results were consistent with a negative correlation between public debt and economic growth. However, their research concluded that the relationship between public debt and economic growth vanishes when public debt is instrumented with another variable that captures valuation effects due to the interaction between foreign currency debt and exchange rate volatility.

Szabo (2013) investigated the impact of public debt on economic growth in developed countries by using 27 European Union countries. Szabo (2013) applied panel regression models for the period 2008 to 2014 and revealed that public debt and economic growth are negatively related. He established a 1% rise in public debt to reduce the annual economic growth rate by 0.027% in studied economies.

Reinhart *et al*. (2012) analysed the relationship between exceptionally high public debt (defined by gross public debt to nominal GDP ratio exceeding 90% for five years or more) and economic growth in advanced economies since the early 1800s through 2011. The authors identified 26 public debt overhang episodes in 22 advanced economies. Reinhart *et al*. (2012) observed that public debt overhang episodes are associated with lower economic growth than during other periods. Furthermore, the authors found that in the countries that have at least one episode of public debt overhang, real GDP growth averages 3.5% over the full period for which debt/GDP is less than 90%.

In yet another empirical study, Cochrane (2011a, 2011b) examined the relationship between public debt, inflation, monetary and fiscal policies in the great recession of 2008 and 2009. The results supported the negative impact of public debt on economic growth, adding that the negative effect could be more significant, even in the short run, if high public debt increases uncertainty or causes expectations of future sequestration, possibly through inflation, distortionary taxation or financial repression.

Cochrane (2011b) concluded that inflation comes well before fiscal deficits or monetarisation and that: (1) central banks have no control over deflation or inflation; and (2) monetary inflation and increases in government debt usually accompany stagflation. In a related and yet different study, Hausmann and Panizza (2011) argued that foreign currency debt increases a country's volatility by reducing the government's ability to implement countercyclical macroeconomic policies and thus reduce economic growth.

Reinhart and Rogoff (2010a; 2010b) examined the relationship between public debt and economic growth using sample data drawn from 20 advanced economies over the period 1946 to 2009 and concluded that excessive public debt levels correlate negatively with economic growth. However, the authors established no relationship between public debt and growth when public debt is below 90% of GDP in studied

countries. The authors also tested the impact of foreign debt, including debt owed by private entities, on economic growth. For emerging market economies, they found that there exists a statistically significant and negative relationship between gross foreign debt (public and private) and economic growth (Reinhart & Rogoff, 2010a). The results of a negative relationship between public debt and economic growth are supported by the findings of Abbas *et al.* (2011) who discussed the evolution of public debt, both domestic and foreign, in both advanced and less developed countries using an unbalanced panel of 174 countries from 1791 to 2009.

In 2010, Kumar and Woo studied the relationship between public debt and real per capital GDP growth using a sample of 30 advanced and emerging market economies from 1970 to 2007. Using the Generalised Method of Moments (GMM) approach, they argued that it allows them to address endogeneity. Their findings suggest that a 10% increase in public debt-to-GDP ratio is associated with a 20% decline in annual growth of real GDP per capita.

Checherita-Westphal and Rother (2010) tested the impact of public debt on annual growth rate of GDP per capita using a sample of 12 European countries over a period of 40 years starting in 1970. Their research established that an increase in government debt placed upward pressure on real interest rates, thus, reducing investment and economic growth in the studied European countries. The authors concluded that the channels through which public debt negatively impact on annual growth rate of GDP per capita are; (1) private saving; (2) public investment; (3) total factor productivity and (4) sovereign long-term nominal and real interest rates.

Apart from the leading empirical studies discussed above that focus predominantly on aggregate public debt, there is another group of studies that examined the impact of foreign and domestic public debt on economic growth. These studies include Al Kharusi and Ada (2018), Akram (2015), IMF (2005e), Schclarek (2004) and Clements *et al.* (2003).

Al Kharusi and Ada (2018) investigated the relationship between foreign public debt and economic growth in Oman using time-series data for the period 1990 to 2015. The study employed the ARDL to cointegration approach and reported findings consistent with the crowding out effect, that is, foreign public debt and economic growth are negatively related.

Akram (2015) examined the impact of public debt (domestic and foreign) on economic growth and investment in the Philippines during 1975-2010, using an ARDL technique. The main findings were that foreign public debt and economic growth are negatively related, while domestic public debt and economic growth are positively related.

The IMF (2005e) examined the impact of domestic public debt on private sector credit in the context of 40 low-income countries from 1993 to 2002. The study findings revealed that high levels of domestic public debt correlate with low levels of corporate lending and crowding out may occur through channels other than interest rates, such as credit rationing. The IMF (2005e) concluded by arguing against a rapid build-up in domestic public debt, especially in the context of the availability of concessionary foreign financing.

Schclarek (2004) examined the relationship between foreign public debt and annual growth in real GDP per capita in a panel of 59 developing countries between 1970 and 2002, with data averaged into 5-year periods. His research established a negative impact of high foreign public debt on real GDP per capita, with no evidence of threshold effects. Clements *et al.* (2003) also investigated the relationship between foreign public debt and economic growth using a panel of 55 low-income countries for a period 1970 to 1999 and found that a negative relationship existed between foreign public debt and economic growth.

Besides the empirical studies that found a negative relationship between public debt and economic growth, other studies also confirmed a negative relationship between public debt service and economic growth. These studies include, for instance, Hansen (2002), Serieux and Samy (2001) and Weeks (2000).

In 2002, Hansen explored the influence of public debt service payments and aid flows on economic growth and investment using a sample of 50 developing countries, both HIPC and non-HIPC countries. His cross-country study revealed that investment and economic growth are negatively affected by public debt service payments.

Serieux and Samy (2001) analysed the impact of public debt service, investment, human development on economic growth in 53 low- and lower-middle-income economies for the period 1970 to 1999 using panel datasets. Public debt service was found to have a significant negative impact on economic growth through its effect on human capital development.

Using 18 Latin American countries and 4 high-performing Asian countries (Indonesia, Malaysia, Singapore and Thailand), Weeks (2000) studied the relationship between foreign public debt service and the rate of economic growth in two groups of economies from 1960 to 1994. Applying the ordinary least square estimation technique, Weeks (2000) found that the public debt service variable was significant even at less than 1% and established that a 1% increase in public debt service reduced the rate of economic growth by 1.6% in the Latin American countries. However, Weeks (2000) suggested an insignificant relationship between public debt service and economic growth in Asian countries.

Also applying the ordinary least square method, Cohen (1993) examined the correlation between public debt service and investment in 81 least developed countries for the period 1965 to 1987. By dividing the study period into three-time periods, that is, 1965-1973, 1974-1981 and 1982-1987, the empirical results of Cohen (1993) found evidence consistent with the crowding out hypothesis, showing that 1% of GDP paid abroad reduced domestic investment by 0.3% of GDP.

Cunningham (1993) carried out a study on the link between foreign public debt service and economic growth in heavily indebted countries from 1971 to 1986, using standard production functions. Cunningham (1993) classified debt service as a primary factor of production, just like capital and labour. Cunningham (1993) indicates that between 1971 and 1979, public debt service harmed economic growth, but from 1980 to 1986, there was no significant relationship confirmed between the two.

Savvides (1992) analysed the link between public debt service and economic growth by applying cross-sectional time-series data in 43 developing countries between 1980 and 1986. Applying a two-stage limited dependent variable model, debt service similarly reduced economic growth to a high marginal tax rate.

Apart from past studies supporting a negative relationship between public debt, public debt service and economic growth, some studies established a positive correlation between the variables. This empirical literature generally assumes that public debt is prudently used to finance profitable investments. These studies include Gómez-Puig and Sosvilla-Rivero (2018), Owusu-Nantwi and Erickson (2016), Sánchez-Juárez and García-Almada (2016), Greiner (2013; 2011), Spilioti and Vamvoukas (2015), and Abbas and Christensen (2010).

Gómez-Puig and Sosvilla-Rivero (2018) investigated the impact of public debt on economic growth in both central and peripheral countries of the Euro area from 1961 to 2013. Utilising the ARDL bounds testing approach on annual time-series data, they found that a rise in public debt positively impacted economic growth in the short run. The positive impact between the two variables emanates from an increase in the economy's productive capacity and improved industrial efficiency (Gómez-Puig & Sosvilla-Rivero, 2018).

Owusu-Nantwi and Erickson (2016) assessed the impact of public debt on economic growth in Ghana using both the Johansen cointegration and Vector Error Correction models for the period 1970 to 2012. The research established a statistically significant positive long-run association between government debt and economic growth in Ghana.

Sánchez-Juárez and García-Almada (2016) tested whether the rising government stocks promoted increased public investment in Mexico. Using panel data models and the GMM technique with information from 32 states, and data from 1993 to 2012, they established that public debt is positively related to public investment and economic growth in Mexico.

Spilioti and Vamvoukas (2015) explored the relationship between public debt and economic growth in Greece for the period 1970 to 2010 and found a strong positive impact between public debt and GDP growth in Greece. The estimated growth equation by Spilioti and Vamvoukas (2015) included other variables such as the fiscal policy indicators affecting economic growth, indicators of trade openness and external competitiveness, and other control variables related to the demographic characteristics of the economy.

Greiner (2011) analysed the relationship between public debt, economic growth and welfare in a sample of developed countries using endogenous growth models. Greiner (2011) found that in an economy where the government runs a balanced budget or issues debt such that the public debt-to-GDP ratio asymptotically converges to zero, public debt leads to positive economic growth rates. Greiner (2013) added that governments' primary surplus rises as public debt rises, and that an increase in tax rates, such as government expenditure and public debt increase, can lead to increased gross investment and hence, economic growth. Earlier on, Greiner and

Fincke (2009) found evidence consistent with a positive association between public debt and economic growth in sampled European countries.

Another group of empirical studies stresses that domestic public debt positively impacts economic growth. These studies include, among others, Bua *et al.* (2014), Abbas and Christensen (2010), and Panizza (2008) and argue that domestic borrowing brings benefits but only in the presence of a sound institutional and macroeconomic framework. The studies also emphasised the significance of a balanced investor base to minimise the cost of government debt and buoyance of market yield (Bua *et al.,* 2014; Abbas and Christensen, 2010).

Bua *et al.* (2014) investigated the relationship between domestic public debt and economic growth in 36 low-income countries from 1971-2011. Using panel data, Bua *et al.* (2014) revealed that domestic public debt has a positive impact on economic growth in low-income countries. They concluded that an increase in the share of long-term instruments over time, as well as a lengthening maturity period of securities, decreases government borrowing costs. However, they stressed that the composition of the investor base, primarily composed of commercial banks, may suppress lending to the private sector.

Abbas and Christensen (2010) analysed the relationship between domestic public debt and economic growth in 93 low-income countries and emerging economies from 1975 to 2004 using the modified system of GMM estimation technique. Their reported results show that moderate levels of noninflationary domestic public debt as a proportion of GDP exert a significant positive impact on economic growth through an increase in investment efficiency. The authors stated that the growth contribution of domestic public debt is higher if (1) it is marketable; (2) bears favourable real interest rates, and (3) is outside the banking system.

Apart from studies that have found either a negative or positive impact of public debt, the issue of public debt service and its impact on economic growth is a growing body of empirical literature that supports the notion that public debt is nonlinearly related to economic growth. These studies attempt to estimate the threshold limit of public debt share to GDP. The empirical work linked to this hypothesis includes Pescatori *et al.* (2014), Baum *et al.* (2013), and Minea and Parent (2012), among others.

Pescatori *et al.* (2014) investigated the nonlinear relationship between public debt and economic growth using 34 advanced economies drawn from the IMF membership database. By employing the instrument variable approach to data dating back to 1875, there was no evidence of any particular debt threshold for debt ratios above which economic growth prospects are severely undermined. The findings of Pescatori *et al.* (2014) further suggest that the association between public debt and economic growth is partially influenced by the trajectory of debt, where countries with high but declining levels of debt multiplied relative to those countries with high but rising debt levels.

Focusing on European countries, Baum *et al*. (2013) analysed the relationship between public debt and economic growth using the dynamic threshold panel methodology from 1990 to 2010. The results suggest that the short-run impact of government debt on GDP growth is positive. However, Baum *et al*. (2013) discovered that as the public debt-to-GDP ratio approaches 67%, the relationship decreases to around zero and subsequently varnishes. For public debt-to-GDP ratios above 95%, public debt negatively related to economic growth in the studied economies.

Using a panel of countries drawn from the IMF membership database, Minea and Parent (2012) studied the relationship between public debt and economic growth using the Panel Smooth Threshold Regression (PSTR) model. Their findings revealed that public debt negatively related to economic growth when the government debt-to-GDP ratio is between 90% and 115%. However, the relationship between public debt and economic growth becomes positive when government debt-GDP ratio surpasses 115%, and there is no statistically significant relationship between the two variables when the public debt to GDP ratio is below 90%.

Cecchetti *et al.* (2011) investigated the effect of public debt on economic growth for a sample of 18 OECD countries for the period 1980 to 2008. In their panel growth model regression with specific fixed effects estimations, the authors specified threshold levels, thus producing a nonlinear relationship between public debt and economic growth. The results of Cecchetti *et al.* (2011) found a threshold value of 85% for GDP and concluded that an increase of 10% in the public debt-to-GDP ratio leads to a decrease of 0.13% points in the per capita GDP growth rate.

In 2010, Checherita-Westphal and Rother studied the relationship between public debt and annual growth rate of GDP per capita across 12 European countries for the period 1970 to 2010. Using a quadratic specification estimated by fixed effects, system GMM, and two-stages least squares, they found a nonlinear (bell-shaped) relationship between public debt and economic growth. According to these results, there is a positive relationship between public debt and economic growth for a public debt-to-GDP ratio of below 90%, with the marginal effect of public debt turning negative when the public debt-to-GDP ratio is between 90% and 105%.

Using a sample of 44 countries, 20 advanced economies and 24 emerging economies, Reinhart and Rogoff (2010a) examined the relationship between public debt, economic growth and inflation. The historical data sets in the two samples spanned from 1946 to 2009 for advanced countries and from 1946 to 2009 and 1900 to 2009 for emerging countries. They found that high public debt relative to GDP of above 90% is associated with lower economic growth rates in both advanced and emerging countries. The results also indicated that lower levels of public debt relative to GDP, of less than 60%, are associated with adverse economic growth rates in emerging economies.

Using a different setting, Reinhart and Rogoff (2010b) also analysed the relationship between government debt and economic growth in 44 countries over 200 years. They found that public debt and economic growth have a weak relationship for public debt/GDP ratios below a threshold of 90% of GDP, above which the relationship turns negative.

Presbitero (2010) investigated the impact of public debt on economic growth and found that public debt has a positive, negative and irrelevant impact on GDP growth for debt ratio below 10%, between 10% and 90%, and above 90% thresholds, respectively. Presbitero's (2010) findings were from a panel of 92 low- and middle-income countries from 1990 to 2007 using endogenous growth models.

Among the studies that tested the nonlinear relationship between foreign public debt and economic growth was that of Pattillo *et al.* (2002). The authors applied several econometric methodologies, including the ordinary least squares, instrumental variables approach, fixed effects and GMM method to 93 developing countries for the

period 1969-1998. The results showed that the impact of foreign public debt on economic growth becomes negative for debt levels above 160-170%.

Although limited, some empirical studies support the hypothesis that public debt, public debt service and economic growth are not related. Studies in this category include, among others, Akram (2016; 2015), Tchereni *et al.* (2013), Kourtellos *et al.* (2013) and Jalles (2011).

Akram (2016) examined the impact of public debt service on economic growth and poverty in selected South Asian countries, that is, Bangladesh, India, Pakistan and Sri Lanka, for the period 1975 to 2010. Akram (2016) used the standard panel data estimation methodology and found that public debt service and economic growth do not relate in these economies.

In 2015, Akram had examined the impact of foreign public debt and public debt service on economic growth and investment in the Philippines for the period 1975 to 2010. Applying the ARDL technique, the author found that: (1) foreign public debt has a negative and statistically significant relationship with both real GDP growth and investment; and (2) public debt service has a statistically insignificant relationship with both real GDP growth and investment – Ricardian Equivalence Hypothesis.

Tchereni *et al.* (2013) analysed the impact of foreign public debt on economic growth in Malawi using time-series data for the period 1975-2003. The dependent variable was economic growth explained by the level of foreign public debt, inflation rate, exchange rate, the prime lending rate, private and public investment. The reported results show that foreign public debt and economic growth are not related.

Kourtellos *et al.* (2013) examined the relationship between public debt and economic growth by employing a balanced 10-year period panel dataset covering 82 advanced economies for the period 1980 to 2009 – employing a combination of structural threshold methodology and pooled panel linear regressions. According to Kourtellos *et al.* (2013), the use of the structural threshold regression model allowed for the control of parameter heterogeneity, uncertainty and endogeneity. Their study revealed that if a country's institutions are of sufficiently high quality, then, public debt is growth neutral and that the connection between public debt and economic growth could be

influenced by other exogenous variables like trade openness and/or institutional quality, and the structure and composition of public debt.

Panizza and Presbitero (2012) analysed the relationship between public debt and economic growth using a sample of OECD countries. The results from applying the instrument variable approach failed to reject the null hypothesis that public debt has no impact on economic growth in the studied economies. Panizza and Presbitero (2012: 18) added that "in the presence of multiple equilibria, a fully solvent government with a high level of debt may decide to put in place restrictive fiscal policies to reduce the probability that a sudden change in investors' sentiments would push the country towards the bad equilibrium". They concluded that the neutrality of public debt on economic growth in the studied developed economies could probably be because all OECD countries used their central banks as lenders of last resort, and the economies were still below the country-specific thresholds at which public debt imposes a negative effect on economic growth.

Jalles (2011) examined the impact of government debt service on economic growth using a sample of 72 developing countries for the period 1970 to 2005. By applying a combination of the fixed effects and GMM estimation techniques, the results indicated no relationship between public debt service and economic growth.

Schclarek (2004) examined the relationship between public debt and annual growth rate of GDP per capita in a panel of 24 industrial countries and 59 developing countries, from 1970 to 2002, with data averaged into 5-year periods. He found no statistical evidence linking foreign public debt and factor productivity growth in developing countries.

Pattillo *et al*. (2002) analysed the relationship between foreign public service and economic growth using panel data of 93 developing countries for the period 1969 to 1998. After using four different econometric methodologies, that is instrumental variables with lagged values, Least Square Method, GMM (with and without dummies) and fixed effects. They concluded that there is no statistically significant relationship between foreign public debt service and economic growth in developing countries.

Pattillo *et al.* (2002) argued that as long as countries use the borrowed funds for productive investment and are not affected by macroeconomic instabilities arising from

policy uncertainties or sizable adverse shocks, economic growth should increase and allow for timely debt repayment. However, Pattillo *et al.* (2002) concluded that if public debt becomes larger than the country's repayment ability, then, public debt service costs would (1) discourage further domestic and foreign investment; and (2) lower efficiency of investment, thus harm economic growth.

Table 5.1 gives a summary of the empirical studies that support a negative impact, a positive impact, a nonlinear impact and debt neutrality (no impact) of public debt, public debt service on economic growth.

Table 5.1: A summary of empirical studies on the impact of public debt, public debt service on economic growth

Author(s)	Country/Region	Methodology	Dependent variable(s)	Findings
Studies consistent with the negative impact of public debt, public debt service on economic growth				
Mhlaba & Phiri, 2019	South Africa	➢ Autoregressive distributed lag ➢ Annual time-series data	➢ Aggregate public debt	Negative impact
Gómez-Puig & Sosvilla-Rivero, 2018	11 Euro area countries	➢ Autoregressive distributed lag ➢ Annual time-series data	➢ Aggregate public debt	Negative impact
Al Kharusi & Ada, 2018	Oman	➢ Autoregressive distributed lag ➢ Annual time-series data	➢ Foreign public debt	Negative impact
Akram, 2016	Bangladesh, India, Pakistan and Sri Lanka	➢ Panel data analysis ➢ Fixed effects	➢ Aggregate public debt	Negative impact
Ahlborn & Schweickert, 2016	111 OECD and developing countries	➢ Panel data analysis ➢ Fixed effects ➢ Random effects ➢ Pooled ordinary least squares ➢ 2-stage least squares	➢ Aggregate public debt	Negative impact
Akram, 2015	Philippines	➢ Autoregressive distributed lag ➢ Annual time-series data	➢ Aggregate public debt ➢ Foreign public debt	Negative impact
Egert, 2015	OECD countries	➢ Ordinary least squares ➢ Annual time-series data	➢ Aggregate public debt	Negative impact

Woo & Kumar, 2015	79 countries (38 advanced and emerging, and 41 developing countries)	➢ Between estimator ➢ Pooled ordinary least squares ➢ System generalised method of moments ➢ Fixed effects	➢ Aggregate public debt ➢ Real GDP growth per capita	Negative impact
Panizza & Presbitero, 2014	OECD countries	➢ Instrumental variable approach	➢ Aggregate public debt	Negative impact
Szabo, 2013	European Union countries	➢ Panel data analysis	➢ Aggregate public debt	Negative impact
Abbas *et al.,* 2011	174 countries	➢ Unbalanced panel data analysis	➢ Aggregate public debt	Negative impact
Reinhart & Rogoff, 2010a	44 countries	➢ Instrumental variable approach	➢ Aggregate public debt	Negative impact
Reinhart & Rogoff, 2010b	44 countries	➢ Instrumental variable approach	➢ Aggregate public debt	Negative impact
Kumar and Woo, 2010	30 advanced and emerging market economies	➢ Between estimator ➢ Pooled ordinary least squares ➢ System generalised method of moments ➢ Fixed effects	➢ Aggregate public debt	Negative impact
Schclarek, 2004	59 developing countries	➢ Generalised methods of moments	➢ Foreign public debt	Negative impact
Clements *et al.,* 2003	55 developing countries	➢ Fixed effects ➢ System Generalised methods of moments	➢ Foreign public debt	Negative impact
Hansen, 2002	50 HIPC and Non-HIPC countries	➢ Cross-country regressions ➢ Generalised methods of moments	➢ Foreign public debt service	Negative impact

Serieux & Samy, 2001	53 low- and lower-middle-income countries	➢ Panel data analysis ➢ Fixed effects	➢ Total public debt service	Negative impact
Weeks, 2000	18 Latin American countries and 4 Asian countries	➢ Ordinary least squares ➢ Annual time-series data	➢ Foreign public debt service	Negative impact
Savvides, 1992	43 Severely indebted countries	➢ Ordinary least squares ➢ Annual time-series data	➢ Total public debt service	Negative impact
Studies consistent with the positive impact of public debt, public debt service on economic growth				
Gómez-Puig & Sosvilla-Rivero, 2018	11 Euro area countries	➢ Autoregressive distributed lag ➢ Annual time-series data	➢ Aggregate public debt	Positive impact
Owusu-Nantwi & Erickson, 2016	Ghana	➢ Johansen cointegration analysis ➢ Vector error correction	➢ Aggregate public debt	Positive impact
Sánchez-Juárez & García-Almada, 2016	Mexico	➢ Panel data analysis ➢ Generalised methods of moments	➢ Aggregate public debt	Positive impact
Spilioti & Vamvoukas, 2015	Greece	➢ Unrestricted VAR ➢ Annual time-series data	➢ Aggregate public debt	Positive impact
Bua *et al.,* 2014	36 low-income countries	➢ Instrumental variable approach	➢ Domestic public debt	Positive impact
Greiner, 2011	European countries	➢ Endogenous growth model	➢ Aggregate public debt	Positive impact

Abbas & Christensen, 2010	93 low-income countries and emerging economies	➢ Fixed effects ➢ Ordinary least squares ➢ Random effects ➢ System GMM	➢ Domestic public debt	Positive impact
Adams & Bevan, 2005	45 developing countries.	➢ Panel data analysis ➢ Fixed effects	➢ Domestic public debt	Positive impact
Studies consistent with the nonlinear impact of public debt, public debt service on economic growth				
Pescatori *et al.,* 2014	34 advanced economies	➢ Instrument variable approach	➢ Aggregate public debt	Nonlinear impact
Baum *et al.,* 2013	European countries	➢ Dynamic threshold panel analysis	➢ Aggregate public debt	Nonlinear impact
Minea & Parent, 2012	IMF database	➢ PSTR	➢ Aggregate public debt	Nonlinear impact
Cecchetti *et al.,* 2011	18 OECD countries	➢ Panel data analysis ➢ Fixed effects	➢ Aggregate public debt	Nonlinear impact
Checherita-Westphal & Rother, 2010	12 developed countries	➢ Panel data analysis ➢ Fixed effects	➢ Aggregate public debt	Nonlinear impact
Reinhart & Rogoff, 2010a	44 countries (20 advanced economies and 24 emerging economies)	➢ Panel data analysis ➢ Fixed effects	➢ Aggregate public debt	Nonlinear impact
Pattillo *et al.,* 2002	93 developing countries	➢ Ordinary least squares ➢ Instrumental variables ➢ Fixed effects ➢ System Generalised methods of moments ➢ Panel data analysis	➢ Foreign public debt	Nonlinear impact

Studies consistent with neutrality (no impact) of public debt, public debt service on economic growth				
Akram, 2016	Bangladesh, India, Pakistan and Sri Lanka	➢ Panel data analysis	➢ Total public debt service ➢ Foreign public debt ➢ Domestic public debt	No impact
Akram, 2015	Philippines	➢ Autoregressive distributed lag bounds approach ➢ Annual time-series data	➢ Total public debt service ➢ Foreign public debt ➢ Domestic public debt	No impact
Tchereni *et al.*, 2013	Malawi	➢ Ordinary least squares method ➢ Annual time-series data	➢ Foreign public debt	No impact
Kourtellos *et al.,* 2013	82 advanced economies	➢ Structural threshold methodology ➢ Pooled panel linear regressions	➢ Aggregate public debt	No impact
Panizza & Presbitero, 2012	OECD countries	➢ Instrument variable approach	➢ Aggregate public debt	No impact
Adams & Bevan, 2005	45 developing countries.	➢ Panel data ➢ Fixed effects	➢ Aggregate public debt ➢ Foreign public debt	No impact
Jalles, 2011	72 developing countries	➢ Generalised methods of moments	➢ Aggregate public debt ➢ Total public debt service	No impact
Schclarek, 2004	24 developed countries	➢ Generalised methods of moments	➢ Aggregate public debt	No impact
Pattillo *et al.,* 2002	93 developing countries	➢ Instrumental variables ➢ Ordinary least squares method ➢ System Generalised methods of moments ➢ Fixed effects	➢ Foreign public debt service ➢	No impact
Hansen, 2001	54 developing countries	➢ Cross-country regressions ➢ Generalised methods of moments	➢ Foreign public debt service	No impact

5.3.2 Causal relationship between public debt, public debt service and economic growth: Empirical literature review

The empirical literature on the causality between public debt, public debt service and economic growth is still scarce, and results are mixed. The available empirical results indicate variations arising from both cross-country heterogeneity and time variations. Some studies found unidirectional causality from public debt, public debt service to economic growth while others established bidirectional causality between the variables. Some studies found no causality between public debt, public debt service and economic growth.

Studies that found a unidirectional causality between public debt, public debt service and economic growth include Donayre and Taivan (2017), Gómez-Puig and Sosvilla-Rivero (2015), Kobayashi (2015) and Afxentiou (1993). Donayre and Taivan (2017) carried out a causality study between public debt and economic growth in a sample of 20 OECD countries from 1970 to 2010. Applying both Granger-causality tests and Vector Autoregressive (VAR)-based tests, the authors found that the causal link of public debt to real economic growth is intrinsic to each country. The findings of Donayre and Taivan (2017) suggested that in highly market-driven economies, the direction of causality is from low economic growth to public debt; while in more socialist states, with large governments, it runs either from low economic growth to public debt accumulation or is bidirectional.

Gómez-Puig and Sosvilla-Rivero (2015) tested the causal relationship between public debt and economic growth in 11 central and peripheral countries of the European Economic and Monetary Union using time-series data from 1980 to 2013. The empirical evidence was mixed. The results for Germany, Greece, Italy, Belgium and Spain provided evidence that causality flows from public debt to economic growth. For Finland and Ireland, the authors found that causality runs from economic growth to public debt, while there was no causality registered in Austria and Portugal.

Kobayashi (2015) examined the causality between public debt and economic growth in Japan and found evidence consistent with a unidirectional causal flow from low economic growth to public debt in this country.

Afxentiou (1993) carried out a causality study in 20 middle-income countries from 1971 to 1988. Employing the Granger-causality framework, he established a unidirectional causality running from public debt service to economic growth in studied countries.

Apart from studies that found a unidirectional causality between public debt, public debt service and economic growth, some identified a bidirectional causality. Among these were Owusu-Nantwi and Erickson (2016), Egbetunde (2012), Ferreira (2009) and Amoateng and Amoako-Adu (1996).

Owusu-Nantwi and Erickson (2016) used the Johansen cointegration and the Vector Error Correction model to examine the causal relationship between public debt and economic growth in Ghana for the period 1970 to 2012. They found bidirectional causality between public debt and economic growth in Ghana.

In 2012, Egbetunde studied the causal relationship between public debt and economic growth in Nigeria from 1970 to 2010 using a VAR model and established bidirectional causality. Similarly, by applying the VAR methodology and Granger-causality test, Ferreira (2009) examined the causal-effect relationship between public debt and economic growth in 20 OECD countries between 1988 and 2001 and found bidirectional causality between the growth rate of GDP per capita and public debt.

Using panel data regressions in a Granger-causality framework, Abbas and Christensen (2010) tested the existence of causality between public debt and economic growth, covering 93 low-income countries and emerging markets from 1975 to 2004. The results supported bidirectional causality in the studied countries. Furthermore, the authors argued that the relationship between the two variables can be enhanced by improving monetary policy, promoting financial market development, developing public sector financial accountability, among other factors.

Amoateng and Amoako-Adu (1996) evaluated the causal relationship between foreign public debt service, exports and economic growth in 35 African countries using Granger causality framework. The authors found feedback causality between public debt service, exports and GDP growth in the studied countries.

Some studies found no causality between public debt, public debt service and economic growth, including those by Panizza and Presbitero (2014), Jalles (2011) and Reinhart and Rogoff (2010a).

Using an instrumental variable approach, Panizza and Presbitero (2014) studied the direction of causality between public debt and economic growth in a sample of OECD countries and found no real evidence that public debt Granger-causes economic growth. They argued that the causal relationship between government debt and economic growth vanishes once correction for endogeneity take place.

Jalles (2011) tested the existence of a causal relationship between public debt service and economic growth in 72 developing countries from 1970 to 2005. After employing the Granger-causality estimation technique, his results were consistent with the debt service-economic growth neutrality hypothesis.

Reinhart and Rogoff (2010a) analysed the direction of causality between public debt and economic growth using a sample of 20 industrialised economies from 1949 to 2009 and found no evidence of a causal relationship between the two variables.

Ahmed *et al.* (2000) investigated the causality between foreign public debt service and economic growth in Asian countries for the period 1970 to 1997. Employing the trivariate Granger-causality framework, they found no evidence of a causal link between foreign public debt service and economic growth.

Table 5.2 gives a summary of the empirical studies on causality between public debt, public debt service and economic growth.

Table 5.2: A summary of empirical studies on causality between public debt, public debt service and economic growth

Author(s)	Country/Region	Methodology	Dependent variables	Direction of causality
Donayre & Taivan, 2017	20 OECD countries	➢ VAR ➢ Granger-causality framework	➢ Aggregate public debt ➢ Real GDP growth	Debt ← growth (capitalist economies)
Kobayashi, 2015	Japan	➢ Simulations ➢ Granger causality framework ➢ Time-series data	➢ Aggregate public debt ➢ Real GDP growth	Debt ← growth
Woo & Kumar, 2015	24 OECD countries	➢ Granger causality framework ➢ Panel data analysis	➢ Aggregate public debt ➢ Real GDP growth per capita	Debt ← growth
Gómez-Puig & Sosvilla-Rivero, 2015	European Economic and Monetary Union countries	➢ Granger-causality framework ➢ Time-series data	➢ Aggregate public debt ➢ Real GDP growth	Debt ← growth (Finland and Ireland) Debt → growth (Germany, Greece, Italy, Belgium and Spain)
Afxentiou, 1993	20 developing countries	➢ Johansen cointegration analysis ➢ Granger causality framework	➢ Public debt service ➢ Real GDP growth	Debt service → growth
Donayre & Taivan, 2017	20 OECD countries	➢ VAR ➢ Granger-causality framework ➢ Time-series data	➢ Aggregate public debt ➢ Real GDP growth ➢	Debt ↔ growth (socialist economies)
Owusu-Nantwi & Erickson, 2016	Ghana	➢ Time-series data ➢ Johansen cointegration analysis	➢ Aggregate public debt ➢ Real GDP growth	Debt ↔ growth

Egbetunde, 2012	Nigeria	➢ Time-series ➢ VAR ➢ Granger causality framework	➢ Aggregate public debt ➢ Real GDP growth	Debt ↔ growth
Ferreira, 2009	20 OECD countries	➢ Granger causality framework ➢ Panel data analysis	➢ Aggregate public debt ➢ Real GDP growth	Debt ↔ growth
Abbas & Christensen, 2010	93 countries	➢ Granger causality test ➢ Panel data analysis	➢ Aggregate public debt ➢ Real GDP growth	Debt ↔ growth
Amoateng & Amoako-Adu, 1996	35 African countries	➢ Granger causality framework	➢ Public debt service ➢ Real GDP growth	Debt service ↔ growth
Donayre & Taivan, 2017	Canada, Italy, Portugal, Spain and the U.K.	➢ VAR ➢ Granger-causality framework	➢ Aggregate public debt ➢ Real GDP growth	No causality
Gómez-Puig & Sosvilla-Rivero, 2015	European Economic and Monetary Union countries	➢ Granger-causality framework	➢ Aggregate public debt ➢ Real GDP growth	No causality (Austria and Portugal)
Panizza & Presbitero, 2014	17 OECD countries	➢ Endogenous growth model ➢ Instrumental variable approach	➢ Aggregate public debt ➢ Real GDP growth per capita	No causality
Jalles, 2011	72 developing countries	➢ Panel Granger causality	➢ Public debt service ➢ Real GDP growth	No causality
Reinhart & Rogoff, 2010a	44 countries	➢ Endogenous growth model ➢ Instrumental variable approach	➢ Aggregate public debt ➢ Real GDP growth	No causality

Overall, the review of the literature on the relationship between public debt, public debt service and economic growth established heterogeneity on the impact of public debt (domestic and foreign) on economic growth, with the public debt-economic growth nexus varying across countries, depending partly on the timeframe considered, data and methodology. However, in the main, there is overwhelming evidence of the negative impact of both public debt and public debt service on economic growth (Huang *et al.,* 2018; Gómez-Puig & Sosvilla-Rivero, 2018; Ncanywa & Masoga, 2018; Akram, 2016; 2015; among others).

The study also found that the empirical studies that tested the relative impact of domestic and foreign public debt on economic growth are insufficient, and the evidence is mixed (Akram, 2016; 2015). The analysis further revealed that foreign public debt enjoyed more coverage than its domestic counterpart as proven by more studies on the impact of foreign debt compared to domestic public debt on economic growth (Akram, 2015; Clements *et al*., 2003; Pattillo *et al.,* 2002; among others).

While substantial empirical work in developed economies explored the relationship between public debt (domestic and foreign) and economic growth (Egert, 2015; Panizza & Presbitero, 2014; Baum *et al.,* 2013; Checherita-Westphal & Rother, 2010; Kumar & Woo, 2010; Reinhart & Rogoff, 2010a, 2010b; Ferreira, 2009), few studies examined this relationship in the context of emerging and developing countries in contemporary periods, except for Owusu-Nantwi (2016), Egbetunde (2012), Abbas and Christensen (2010). These exceptions mostly used panel data techniques and did not extricate between individual countries or, in some instances, between short- and long-run effects.

From the causality front, although the empirical studies are still scant, especially in emerging and developing economies, the dominant causal flow established during this literature review is bidirectional.

5.6 Conclusion

In this chapter, the study focuses on reviewing the theoretical underpinnings and empirical literature on the public debt-economic growth nexus. The reviewed literature on the impact of public debt (domestic and foreign) on economic growth shows that

the debate is ongoing and inconclusive. The chapter also provided a brief discussion of economic growth models.

The reviewed literature on the impact of public debt, public debt service on economic growth was in four categories, namely, negative impact, positive impact, nonlinear and no impact. On balance, the chapter revealed that the existing theoretical and empirical literature largely supports the negative impact of public debt on economic growth.

From the causality front, existing literature on the causality between aggregate public debt and economic growth, and between public debt service and economic growth, are still inadequate, and the results are mixed. Whereas the dominant causal flow between aggregate public debt and economic growth was bidirectional, in the case of public debt service and economic growth, no leading causal flow was confirmed.

This literature review revealed that the impact of public debt on economic growth and that the causality between public debt and economic growth is not a given and varies depending on a set of heterogeneous factors, including the level of development of the sample countries, datasets, research methodology, and the selected control variables, among other factors. The study, therefore, concludes that similar to the impact of public debt (domestic and foreign) on economic growth, and public debt service on economic growth; the causality between aggregate public debt and economic growth, and between public debt service and economic growth, is not clear-cut. The notion that public debt (domestic or foreign) or public debt service is bad for economic growth is merely based on prima facie or superficial evidence – and not always correct.

CHAPTER SIX

EMPIRICAL MODEL SPECIFICATION AND ESTIMATION TECHNIQUES

6.1 Introduction

This chapter outlines the specification of the empirical model, as well as the estimation techniques used in the study. Section 6.2 discusses the model's specification – both dynamic impact and causal relationships, and also presents the justification of the variables included in the models. Section 6.3 details the estimation techniques employed in the study. Section 6.4 discusses the data sources and the definitions of variables used in the study and Section 6.5 presents the concluding remarks.

6.2 Empirical model specification

6.2.1 General empirical model specification – Dynamic impact

6.2.1.1 Empirical specification of Model 1

Model 1 investigates the impact of aggregate public debt on economic growth. The general empirical model adopted in this study has its foundations in the earlier studies by Dombi and Dedák (2019), Dedák and Dombi (2018), and Adam and Bevan (2005) that employed similar annual time-series methodology. In essence, this approach is motivated by the available consistent and reliable time-series data for all the variables of interest in the study countries, as well as the selected dynamic autoregressive model. The general model is specified as follows:

$$y_t = \alpha_0 + \alpha_1 PD_t + \alpha_2 I_t + \alpha_3 L_t + \alpha_4 FB_t + \alpha_5 TOP_t + \alpha_6 S_t + \alpha_7 TOT_t + \varepsilon_t \ldots\ldots\ldots\ldots (6.1)$$

Where:

y = annual growth rate of real GDP per capita (a proxy for economic growth);

PD = the stock of public debt as a share of GDP (a proxy for public debt);

I = share of gross fixed capital formation in GDP (a proxy for gross domestic investment);

L = share of the economically active population aged between 15 and 64 years in the total working-age population (a proxy for labour);

FB = fiscal balance as a share of GDP (a proxy for fiscal balance);

TOP = the sum of exports and imports as a ratio of GDP (a proxy for trade openness);

S = share of savings in GDP (a proxy for gross domestic savings);

TOT = trade balance as a share of GDP (a proxy for terms of trade);

α_0 = the intercept;

$\alpha_1 - \alpha_7$ = the respective regression coefficients;

ε_1 = the white-noise error term; and

t = the period in years.

The specified empirical Model 1 (equation 6.1) applies to each of the three study countries – Zambia, Zimbabwe and South Africa.

6.2.1.2 Empirical specification of Model 2

Model 2 tests the relative impact of domestic and foreign public debt on economic growth. Like Model 1, the dependent variable in Model 2 is economic growth, proxied by the annual growth rate of real GDP per capita. Public debt comprises of two parts, public and publicly guaranteed domestic and foreign debt. Domestic public debt refers to all financial commitments denominated in local currency owed by the central government to the residency of that country (Panizza, 2008: 4). Foreign public debt refers to all financial commitments denominated in foreign currency owed by the central government to the non-residents of that country, and under the jurisdiction of a foreign court (Panizza, 2008: 4).

Model 2, therefore, splits aggregate public debt into domestic and foreign components, and then each component enters into the model separately as a regressor. The general empirical model adopted in this study to examine the relative impact of the disaggregated public debt on economic growth is a variant of the previous works of Akram (2016; 2015), Yakita (2008) and Adams and Bevan (2005) that applied similar

annual time-series methodology. Specifically, the methodology in this study is motivated by the available consistent and reliable time-series data for the dependent and independent variables in the study countries, as well as the selected dynamic autoregressive model. The general model is specified as follows:

$$y_t = \lambda_0 + \lambda_1 DPD_t + \lambda_2 FPD_t + \lambda_3 I_t + \lambda_4 L_t + \lambda_5 FB_t + \lambda_6 TOP_t + \lambda_7 S_t + \lambda_8 TOT_t + \varepsilon_{2t}$$

$$\ldots\ldots\ldots

Where:

PDS = the stock of public debt service as a share of GDP (a proxy for public debt service);

β_0 = the intercept;

$\beta_1 - \beta_7$ = the respective regression coefficients; and

ε_3 = the white-noise error term.

All other variables are as defined in Model 1.

The specified empirical Model 3 (equation 6.3) applies to each of the three study countries – Zambia, Zimbabwe and South Africa.

6.2.2 General empirical model specification – Granger-causality (Model 4)

Model 4 tests the Granger-causality between aggregate public debt and economic growth, and between public debt service and economic growth. The dynamic causal relationships in this study are tested using a multivariate Granger-causality framework – which is based on the ARDL bounds testing techniques, as developed by Pesaran and Shin (1999), and later improved by Pesaran *et al*. (2001).

Although cointegration, as given by the ARDL procedure, provides evidence of the presence of causality, at least in one direction, it does not establish the direction of causality between variables (Odhiambo, 2004; Masih & Masih, 1998). The direction of causality can only be demonstrated through the VECM-Granger-causality model derived from the long-run cointegrating vectors (Odhiambo, 2008). Apart from specifying the direction of causality amongst variables, the VECM-Granger-causality model makes it possible to differentiate between short- and long-run causality (Masih & Masih, 1998). One of the strengths of the selected ARDL approach is that it produces unbiased estimates in small or finite data sample sizes, even when some of the regressors are endogenous (Narayan, 2004; Pesaran *et al*., 2001) (see also Section 6.3.2).

Model 4 divides into two – 4a and 4b – where Model 4a tests the Granger-causality between public debt (PD) and economic growth (y) and Model 4b tests the Granger-

causality between public debt service (PDS) and economic growth (y). Fiscal balance (FB) and savings (S) are the intermittent variables in the multivariate Granger-causality models (Model 4a and Model 4b), such that the multivariate Model 4a consists of PD, y, FB, and S. In contrast, the multivariate Model 4b consists of PDS, y, FB, and S. The general multivariate Granger-causality models are specified in Equations 6.4 (a-d) and 6.5 (a-d).

Model 4a: The empirical model on the causality between public debt and economic growth

$$y = f(PD, FB, S) \ldots\ldots\ldots\

The concept of Granger-causality in econometrics can be tracked back to Wiener (1956) who argues that if the prediction of one time-series improves by including information of a second time-series, then the latter is said to have a causal stimulus on the former. Weiner's (1956) idea was later formalised by Granger (1988; 1969) using linear parametric autoregressive models of time-series. Granger (1988; 1969) attempted to answer two economic problems, that is, does correlation imply causation; and the effect of ignored common factors in explaining the relationship between two variables of interest. In the latter case, the causal relationship among variables might disappear after factoring in the formerly disregarded common causes (Lin, 2008).

According to Granger (1969)'s notion, a variable *X* Granger causes another variable *Y* if the prediction of *Y* is improved when *X* is included in the prediction model for *Y*. In a multivariate or complex time-series setting, additional observed variables are included in the two-vector autoregressive (VAR) models for *Y*. The model, including *X,* is called unrestricted or U-model, whereas the one excluding *X* is called restricted or R-model (Lin, 2008). Suppose that we have three stationary time-series $X = \{X(t)\}_{t\epsilon S}$; $Y = \{Y(t)\}_{t\epsilon S}$; and $Z = \{Z(t)\}_{t\epsilon S}$, then, if $F_{Y\rightarrow X/Z} > 0$ in some suitable statistical setting, it implies that the inclusion of *Y* results in improved prediction of *X*, signifying that *Y*→*X* has a direct effect. In contrast, if $F_{Y\rightarrow X/Z} = 0$, the influence *Y*→*X* is said to be wholly mediated by *Z*. Conditional measures such as $F_{Y\rightarrow X/X}$ and $F_{Y\rightarrow Z/Y}$ can be likewise defined. In principle, the autoregressive Granger-causality regression models are based on the belief that the past can cause the future, but the future cannot cause the past.

According to Lin (2008: 4-5), there are four possible causal directions between public debt (PD) and economic growth (y), and between public debt service (PDS) and economic growth (y). The first possibilities are that PD and y are independent ($PD \perp y$), and that PDS and y are independent ($PDS \perp y$). The second possibility, according to Lin (2008), is that public debt levels influence the level of economic growth ($PD \Rightarrow y$). In the third possibility, public debt stocks are driven by the rate of economic growth ($PD \Leftarrow y$). Then there is the fourth possibility of bidirectional causality, which assigns mutual causation between public debt and economic growth, and between public debt service and economic growth, ($PD \Leftrightarrow y$) and ($PDS \Leftrightarrow y$).

Unlike the standard bivariate Granger-causality frameworks which are known to suffer from omitted-variable-bias (Pradhan, 2011; Odhiambo, 2009), the multivariate Granger-causality framework eliminates spurious correlations and increases the general validity of the causation test (Lutkepohl, 1982). The inclusion of two intermittent variables, that is fiscal balance and savings, improves the inference levels between the variables (Odhiambo, 2008).

The choice of fiscal balance as the intermittent variable is mostly influenced by (1) the theoretical controversies in literature on the links between fiscal balance and economic growth, between fiscal balance and public debt, and between fiscal balance and public debt service payment ability; and (2) the influence of fiscal balance (a flow variable) on the growth of public debt (a stock variable). While the neoclassical view supports a negative relationship between fiscal deficit and economic growth, the Keynesian thought purports that the relationship is positive (Fischer, 1993; 1991).

However, the justification of savings as the other intermittent variable in the multivariate Granger-causality framework is influenced theoretically by the growth models. In the classical, endogenous and exogenous growth theories, economic growth is achieved through increased savings, which then lead to capital accumulation (Lucas, 1988; Romer, 1986; Solow, 1956). Empirically, the findings of Checherita-Westphal and Rother (2012), Panizza and Presbitero (2013) and Cecchetti *et al.,* (2011) suggest that a decrease in gross domestic savings necessitates government borrowing to foster resources required for investment.

6.2.3 Justification of variables in the models

The justification of the variables incorporated in Models 1-3 is based on theoretical and empirical literature. The dependent variable in the dynamic impact models (Models 1-3) is the annual growth rate of real GDP per capita, a proxy for economic growth rate. In the literature, various proxies for economic growth have been used, the most common being: (1) nominal GDP (see, for example, Gómez-Puig & Sosvilla-Rivero, 2018); (2) annual growth rate of nominal GDP (see, instance, Spilioti & Vamvoukas, 2015; Reinhart & Rogoff, 2010a; (3) annual growth rate of real GDP (see, for example, Owusu-Nantwi & Erickson, 2016); (4) annual growth rate of real GDP per capita (see, among others, IMF, 2020; Eberhardt, 2019; Woo & Kumar, 2015; and (5)

annual growth rate of real GNP per capita (see, for example, Adam & Bevan, 2005). This study used the annual growth rate of real GDP per capita as an indicator for economic growth because it:

(1) summarises numerous critical country-specific economic and population information;
(2) is comparable across countries;
(3) reduces outliers; and
(4) is suitable for the selected methodology.

The annual growth rate of real GDP per capita is calculated as the ratio of real GDP to the average population of a specific year (World Bank, 2018a). A rise in real per capita GDP symbolises an increase in productivity, which signals growth in the economy and welfare (Mankiw, 2013).

In Model 1, public debt, expressed as a proportion of GDP, is the independent variable of interest. The variable is a measure of the level of the government's gross domestic and foreign indebtedness. Therefore, public sector debt is one measure of the government's ability to manage public finances and defined as the sum of government financial liabilities, mostly debt securities and loans (Kumhof & Tanner, 2005). In general, public debt can be measured in either gross or net terms. Gross public debt measures the stock of outstanding government debt, and net public debt is the difference between gross public debt and the financial assets held by the government (Panizza & Presbitero, 2013: 14). While net public debt may appear to be the best proxy for government indebtedness, calculating net government debt requires a comprehensive evaluation of the government's assets and liabilities, an exercise which is practically difficult (Pescatori *et al.,* 2014: 6; Panizza & Presbitero, 2013). As a consequence, this study uses gross public debt, a measure which is reasonably homogenous across countries. The study expects the relationship between aggregate public debt and economic growth to be negative and statistically significant, especially given the nature of the countries under study which are classified as either developing or emerging.

In Model 2, domestic and foreign public debt, expressed as a proportion of GDP, is the primary independent variables. The relative impact of domestic and foreign public debt on economic growth has received little coverage in the literature (Akram, 2016;

2015; Adams & Bevan, 2005). However, current findings indicate that most developing countries trade currency mismatch risk for maturity mismatch risk (Bua *et al.*, 2014; Panizza, 2008). Typically, most studies support a negative relationship between domestic and foreign public debt and economic growth in developing countries (Ahlborn & Schweickert, 2016; Egert, 2015; Clements *et al.,* 2003). Based on the reviewed empirical literature, this study expects domestic public debt and foreign public debt to negatively impact economic growth, given that the study countries are considered as developing or emerging economies.

In Model 3, public debt service, expressed as a proportion of GDP, is the prime independent variable. While the theoretical literature on the relationship between public debt service and economic growth is largely negative, the empirical evidence is inconclusive. The debt overhang theories argue that public debt service crowds out economic growth by depressing private savings and private investment, as well as deterring potential foreign investors (Krugman, 1988; Modigliani, 1961).

Empirically, the majority of the reviewed studies have found a negative relationship between public debt service and economic growth (Hansen, 2002; Serieux & Samy, 2001; Cohen, 1993). However, a few others maintain that the impact of public debt service on economic growth is statistically insignificant (Akram, 2016; 2015; Jalles, 2011). None of the reviewed studies found evidence supporting a positive impact of public debt service on economic growth. Based on the theoretical arguments presented above, and the existing empirical evidence, the impact of public debt service on economic growth is expected to be negative in this study.

In order to fully specify the empirical models (Models 1-3), six control variables were added, namely, investment (I), labour (L), fiscal balance (FB), trade openness (TOP), gross domestic savings (S), and terms of trade (TOT).

The first control variable is investment proxied by gross fixed capital formation as a share of GDP. The choice of this variable is based on the arguments presented in the neoclassical (Jorgenson, 1967), exogenous (Solow, 1956; Swan, 1956) and endogenous (Romer, 1986; Lucas, 1988) growth models. These traditional growth models purport that investment is a prime determinant of economic growth, as in the standard production function; $Y_t = f(K_t, L_t) = AK^{\alpha}L^{1-\alpha}$. Empirical studies by Mhlaba and Phiri (2019), Al Kharusi and Ada (2018) and Chirwa and Odhiambo (2016), among

others, argued that investment is the primary variable with a stronger positive correlation to economic growth, irrespective of variations in country-specific characteristics. Accordingly, based on the theoretical and empirical economic growth literature, investment is expected to affect the rate of economic growth positively.

The second control variable is labour, which is proxied by the labour force participation rate. Labour force participation rate is the proportion of the economically active population aged between 15 and 64 years to total working-age population (World Bank, 2018a). The significance of labour to economic growth is well-documented in the literature in standard growth accounting models (Solow, 1956; Lucas, 1988). In these growth accounting models, labour productivity positively influences the production process and reduces production costs (Solow, 1956). A priori expectation is that labour is positively related to economic growth.

Fiscal balance as a share of GDP, which is a proxy for government policies – mainly revenue and spending are also included as the third control variable. The impact of fiscal deficit on economic growth interconnects to financial and economic crises and is a critical determinant to government's financing decisions, and hence public debt structures and compositions (Sasmal & Sasmal, 2018; Taylor *et al.,* 2012; Lupu, 2010). The neoclassical school asserts that fiscal deficits reduce economic growth by exerting upward pressure on money supply, price levels and domestic interest rates, which then crowds out private investment (Feltenstein & Shigeru, 2002). The Keynesian school of thought, however, postulates that fiscal expansion has a crowding in effect through stimulating aggregate demand, which then leads to an increase in both domestic production and gross investment (World Bank, 2007; Mankiw *et al.,* 1992). Thus, the fiscal balance may be growth-enhancing if financed by limited seigniorage; and growth-inhibiting if financed by both domestic public debt and non-concessionary foreign loans (Taylor *et al.,* 2012; Reinhart & Rogoff, 2010a; 2010b; Ferreira & Hamilton, 2008). Following the discussion above, the fiscal balance is expected to relate to economic growth positively.

Another control variable included in the dynamic impact models is trade openness, calculated by summing imports and exports as a share of GDP (Nyasha, 2014: 223). As asserted by Rodrik (2010) and the World Bank (2010), an economy's susceptibility to exogenous economic shocks is principally influenced by its degree of exposure to

the global economy, which is measured by the level of economic openness. Accordingly, the transmission channels by which economic openness influence economic vulnerability can be import- or export-related. Further, the ability to repay foreign loans is also largely influenced by the country's volume of international trade (Elmendorf & Mankiw, 1999). Thus, trade openness promotes the movement of both financial resources and capital goods across borders, in addition to increasing industrial efficiency and fostering technological transfers – all of which positively affect economic growth (Stigler, 1956; Boldrin & Levine, 2008). This study, therefore, expects trade openness to significantly influence economic growth positively.

The fifth control variable is gross domestic savings, calculated as gross domestic savings as a share of GDP (S). The choice of this variable as an additional independent variable is mostly influenced by the theoretical connection between savings and economic growth and between savings and public debt (Lucas, 1988; Romer, 1986; Solow, 1956). Lucas (1988) and Romer (1986) argue that increased savings lead to a rise in capital accumulation and a permanent increase in economic growth. Checherita-Westphal and Rother (2012: 6) added that the transmission of public debt to economic growth is through private savings, public investment, total factor productivity, and interest rates. Thus, according to economic growth literature, gross domestic savings are supposed to lead to economic growth – hence its coefficient is expected to be positive.

The sixth control variable, included in the impact Models 1-3, is the terms of trade obtained by dividing a country's export price by its import prices – proxied in this study by trade balance (exports less imports) as a share of GDP. Terms of trade have a substantial impact on countries which are mostly dependent on commodity exports, in particular, their greater susceptibility to trade, current account imbalances and government indebtedness (Ajayi & Khan, 2002). Besides enhancing economies' access to trade opportunities, terms of trade stimulate competition resulting in efficient resource allocation and improved access to modern technology through positive externalities (Grossman & Helpman, 1991). More so, in empirical research undertaken by Checherita-Westphal (2010), Kumar and Woo (2010) and Clements *et al.* (2003), among others, terms of trade are considered a key determinant of the level of economic progress, public sector indebtedness, and ability to settle contracted

financial obligations. Hence, this study expects an improvement in terms of trade to accelerate the rate of economic growth.

6.3 Estimation techniques

The ARDL bounds testing approach is in this study utilised for cointegration testing, impact analysis and Granger-causality testing. This methodology, which is based on the Error Correction Model (ECM) framework, establishes the short- and long-run impacts of public debt and public debt service on economic growth. The study proceeds by performing unit root testing on the variables to ascertain the order of integration.

6.3.1 Unit root tests

One of the critical tasks in econometric modelling, both in univariate and multivariate econometric models, is to determine the order of integration of analysed time-series through unit root tests. Although the pre-testing for unit roots of analysed time-series is not a critical requirement in the ARDL approach, this technique only uses series integrated of order zero [I(0)] or order one [I(1)] or both. Therefore, to establish the order of integration in the analysed series, the study uses three tests, namely, the augmented Dickey-Fuller Generalised Least Square (DF-GLS), the Phillips-Perron (PP) and the Perron (PPURoot) unit root tests.

In each unit root test, the null hypothesis is that the time-series under consideration has a unit root; that is, it is nonstationary, while the alternative hypothesis is that the time-series is stationary (Gujarati, 2004: 815). On one hand, if the computed absolute value of the statistic exceeds the critical values, then the null hypothesis that there is a unit root is rejected, in which case the time-series is stationary (Gujarati, 2004: 816). On the other hand, if the computed absolute value of the statistic does not exceed the critical values, then the null hypothesis that there is a unit root is not rejected, in which case the time-series is nonstationary (Gujarati, 2004: 816).

6.3.1.1 Dickey-Fuller generalised least square (DF-GLS)

Dickey (1976) and Fuller (1976) undertook the pioneering work for testing for a unit root in time-series based on the first-order autoregressive model and the associated DF test statistic:

$$\Delta y_t = (\emptyset_1 - 1)y_{t-1} + \varepsilon_t \qquad t = 1, 2, \dots, T \qquad \dots\dots\dots\dots\dots\dots\dots\dots\dots (6.6)$$

Where $\emptyset_1$ is the autoregression parameter, ε_t is a white noise non-systematic component of the model. The null hypothesis of Equation 6.6 is that the process contains a unit root $(\emptyset_1 = 1)$, against the alternative that it is stationary $(|\emptyset_1| < 1)$. However, the conventional DF test statistic was inefficient when a non-systematic component in DF models was autocorrelated, so the Augmented Dickey-Fuller (ADF) test was constructed by Dickey and Fuller (1981) to clean up any serial correlation in Δy_t and defined as:

$$\Delta y_t = (\emptyset_1 - 1)y_{t-1} + \sum_{i=1}^{\rho-1} \gamma_i \Delta y_{t-i} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (6.7)$$

The major advantage of Equation 6.7 formulation is that it can accommodate higher-order autoregressive processes in ε_t. However, according to Arltova and Fedorova (2016), the challenge with the ADF test is in the choice of lags, ρ; for if ρ is too small, the test will be affected by autocorrelation and if ρ is too large, the power of the test will be lower. Thus, Elliot *et al.* (1996) modified the ADF test statistic using a generalised least squares (GLS) test to create the ADF-GLS test. The ADF-GLS test has substantially the best overall performance in terms of small sample size and power, especially in the presence of an unknown mean or trend (Elliot *et al.,* 1996). Similar to the ADF test, the ADF-GLS test may be run with or without a trend; that is, there are two types of ADF-GLS – GLS detrending and GLS demeaning. In the former case, the series to be tested are detrended before running the ADF test regression, while in the latter, the series to be tested are demeaned before running the ADF test.

According to Stock (1994), if $z_t = (1, t)$, the following ADF-GLS equation for detrending variables is regressed:

$$y_t^d = y_t - \hat{\beta} z_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\

on

$$[y_1, (1-\alpha L)y_2, \ldots\ldots\ldots\ldots, (1-\alpha L)y_T] \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.9)$$

Where $\alpha = 1 + \bar{c}/T$, $\bar{c}$ is the local alternative, *T* is the number of observations, and *L* is the standard lag operator. The values of c, according to Stock (1994) are selected so that the test statistic achieves the most invariant powerful envelope against stationary alternatives at 50% power. Consequently, the series $y^d{}_t$ is regressed using the following ADF equation to test the null hypothesis that ϕ = 0:

$$\Delta y_t^d = \propto + \gamma_t + \emptyset y_{t-1}^d + \sum_{i=1}^{n} \psi_i \, \Delta y_{t-i}^d + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.10)$$

Where *n* is the maximum lag length.

6.3.1.2 Phillips-Perron (PP)

The PP test by Phillips and Perron (1988), corrects for any serial correlation and heteroscedasticity in the error term nonparametrically by modifying the DF test statistics. Contrary to the ADF test, in the PP test, a generating model for the time-series does need not to be specified. More so, in the PP test, there is no need for the researcher to (1) specify a lag length for the test regression, and (2) assume that the error term is white noise (Phillips & Perron, 1988). Perron (1989) proposed a modified DF test defined by the following deterministic trend (DT) function:

$$DT_t = \propto + \beta DU_t + \delta_0 t + \delta_1 DT_t^* \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.11)$$

Where α is the intercept, *DU* is the structural change in the intercept, *t* is the linear trend, and *DT** is the structural change in the linear trend. According to Perron (1989), there are three alternatives for the DT function, which are: (1) a model which allows for a structural change to be reflected in the intercept only; (2) a model which allows for a structural change to be reflected in the slope only; and (3) a model which allows for a structural change to be reflected in both the intercept and slope. The strategy adopted by Perron (1989) first de-trends the series and then analyse the behaviour of the residuals, taking into account a given structural breakpoint, which is defined *ex*

ante. Thus, Perron (1989) suggested that there is a two-step procedure involved in unit root testing. In the first step, a series X_t is regressed on the constant and dummy variable:

$$X_t = \mu + \emptyset DU_t + \varepsilon_t \quad \ldots\ldots\ldots\

Based on Perron (1997), the IO model for testing stationarity, which allows for the simultaneous effects of time change in both the level and the slope of the series can be presented as:

$$x_t = \alpha_0 + \alpha_1 DU_t + d(DTB)_t + \gamma DT_t + \beta t + \rho x_{t-1} + \sum_{i=1}^{n} \phi_i \Delta x_{t-1} + e_t \dots\dots\dots\dots\dots\dots (6.14)$$

Where the intercept dummy DU_t depicts a change in the level, such that $DU_t = 1$ if $t > TB$ and 0 otherwise; DT_t (also DT^*) is the slope dummy representing a change in the slope of the trend function; $DT^* = t - TB$ (or $DT^* = t$ if $t > TB$) and 0 otherwise; the crash dummy (DTB) $= 1$ if $t = TB + 1$, and 0 otherwise; and TB is the break date. The null hypothesis of Equation 6.14 is that there is a unit root with a break, as the dummy variables are incorporated in the regression under the null, against the alternative hypothesis that there is a broken trend stationary process.

In summary, the choice of using three different approaches in unit root testing is based on the unique properties inherent in each technique as follows:

(1) the ADF-GLS test may be run with or without a trend and an unknown mean (Elliott *et al.*, 1996);
(2) the PP test corrects for heteroscedasticity and serial-correlation in the error term non-parametrically (Phillip & Perron, 1988); and
(3) the PPURoot test is efficient in data sets with possibilities of structural breaks in both the intercept and slope – which is the case with the current study (Perron, 1997).

Thus, the application of these three unit root tests also provides useful descriptive statistics for each variable in the models.

6.3.2 Autoregressive distributed lag (ARDL) bounds testing approach to the cointegration analysis

Following the determination of the order of integration of the variables, which must be at most one, the next step is to test the cointegrating relationship of the variables. There are numerous methods for testing cointegration among variables. The most commonly used classical cointegration techniques are the residual-based approach by Engle and Granger (1987) test, and the Full-Maximum Likelihood (FML) test by

Johansen (1991; 1988), and Johansen and Juselius (1990) (Majid, 2008). These conventional cointegration techniques have been criticised for their low testing power, among other shortfalls (Odhiambo, 2008).

This study employs one of the recent and advanced technique, the ARDL bounds testing approach, to investigate whether there exists or not a long-run relationship between public debt and economic growth, and between public debt service and economic growth in the selected Southern African economies. The adoption of the ARDL bounds testing approach in this study over the conventional multivariate cointegration techniques is based on the following merits:

First, the ARDL bounds testing procedure is simple, it allows the cointegration relationships to be estimated by ordinary least squares once the lag order of the model is identified (Pesaran *et al.,* 2001). Further, according to Laurenceson and Chai (2003), the ARDL bounds approach is flexible and can allow the general-to-specific modelling framework by continuously varying the number of lags. Second, unlike in traditional cointegration testing methods, which use a system of equations, the ARDL methodology is parsimonious as it employs only a single reduced form equation (Pesaran & Shin, 1999).

Third, unlike with other conventional cointegration tests that have a restrictive assumption on the order of integration of variables, the ARDL approach can use variables with a mixture of order of integration up to a maximum of one (Narayan, 2004). That is, the ARDL method can produce meaningful and reliable parameters as long as the regressors are purely integrated of order zero [I(0)] or one [I(1)] or mutually cointegrated (Pesaran *et al.,* 2001: 290). Fourth, contrary to the conventional cointegration approaches, the ARDL testing procedure provides robust results even in small or finite data sample sizes as the case with this study (Solarin & Shahbaz, 2013). Fifth, the short- and long-run parameters in the ARDL approach are estimated simultaneously, and the parameters are consistent and unbiased, with valid t-statistics even when some of the regressors are endogenous (Odhiambo, 2009).

Given the strengths of the ARDL bounds testing approach, and its increased usage in contemporary empirical studies (Odhiambo, 2009; Solarin & Shahbaz, 2013), this

procedure is considered the most appropriate and efficient for the analysis of the underlying relationships in this study.

6.3.2.1 Cointegration test

Following Pesaran *et al*. (2001), the ARDL representation of Model 1 (equation 6.1) is shown in equation 6.15 as follows:

ARDL representation of Model 1: Impact of aggregate public debt on economic growth

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta y_{t-i} + \sum_{i=0}^{n} \alpha_{2i} \Delta PD_{t-i} + \sum_{i=0}^{n} \alpha_{3i} \Delta I_{t-i} + \sum_{i=0}^{n} \alpha_{4i} \Delta L_{t-i} + \sum_{i=0}^{n} \alpha_{5i} \Delta FB_{t-i} + \sum_{i=0}^{n} \alpha_{6i} \Delta TOP_{t-i} + \sum_{i=0}^{n} \alpha_{7i} \Delta S_{t-i} + \sum_{i=0}^{n} \alpha_{8i} \Delta TOT_{t-i} + \sigma_1 y_{t-1} + \sigma_2 PD_{t-1} + \sigma_3 I_{t-1} + \sigma_4 L_{t-1} + \sigma_5 FB_{t-1} + \sigma_6 TOP + \sigma_7 S_{t-1} + \sigma_8 TOT_{t-1} + \mu_{1t} \ldots\ldots\ldots\

Δ = the difference operator;

n = the maximum lag length;

μ_1 = the white-noise error term;

t = the period in years.

The ARDL model (equation 6.15) is estimated for Zambia, Zimbabwe and South Africa.

The initial stage in the ARDL bounds testing methodology is to run Equation 6.15 using ordinary least squares, where the null hypothesis of no cointegration is tested against the alternative hypothesis of cointegration.

H_0: $\sigma_1 = \sigma_2 = \sigma_3 = \sigma_4 = \sigma_5 = \sigma_6 = \sigma_7 = \sigma_8 \rightarrow$ no cointegration;

H_1: $\sigma_1 \neq \sigma_2 \neq \sigma_3 \neq \sigma_4 \neq \sigma_5 \neq \sigma_6 \neq \sigma_7 \neq \sigma_8 \rightarrow$ cointegration.

The second step involves the use of the joint F-statistic, based on two asymptotic critical values; a lower value which assumes that the regressors are integrated of order zero [I(0)] and an upper value which assumes that regressors are purely integrated of order one [I(1)] (Pesaran *et al*., 2001; Pesaran & Pesaran, 1997). If the computed F-statistic is above the upper critical value, the null hypothesis of no cointegration is rejected, irrespective of the orders of integration; while the null hypothesis of no cointegration cannot be rejected if the F-statistic falls below the lower bounds critical value. Finally, if the F-statistic falls between the lower and upper bounds, then the cointegration result becomes inconclusive (Pesaran *et al.,* 2001; Narayan & Smyth, 2008).

6.3.2.2 Coefficient estimation

After the verification of the cointegration relationship, the second step is the estimation of long-run coefficients and setting up of the error correction model to ascertain the adjustment coefficient. The study prefers the model that has fewest parameter to estimate, provided that each one of the candidate models is correctly specified, that is, the most parsimonious model of the set. Two information criteria for robustness check, that is, Schwartz Bayesian Criterion (BIC) and Akaike Information Criterion (AIC), were applied to determine the optimal lag length (Davidson & MacKinnon, 2004:

676; Akaike, 1973; Schwarz, 1978). The ARDL procedure computes $(\rho + 1)^k$ number of estimations so as to get the best lags for each variable, where ρ is the highest lag length used and *k* is the number of variables in the equation (Pesaran *et al.,* 2001). According to Cheung and Lai (1993), both the AIC and BIC methods perform well in finite samples provided that the true error structure has a finite and autoregressive representation.

In the ARDL framework, the most diagnostic and model stability tests are performed using the cumulative sum of recursive residual (CUSUM) and cumulative sum of squares of recursive residual (CUSUMQ). The purpose of carrying out these diagnostic tests, as well as stability tests, is to ensure that the estimated models are statistically robust.

The CUSUM and CUSUMQ tests require that the observations to which they are applied possess a natural ordering index (Brown *et al.,* 1975). According to Brown *et al.* (1975), the null hypothesis in both tests is that the regression coefficients are constant over the natural order, against the alternative hypothesis that they are not, implying that the parameter(s) is (are) not constant.

In order to detect parameter changes (structural breaks), the analyses are performed with the recursive residuals (Brown *et al.,* 1975). When the null hypothesis of parameter constancy is correct, then the recursive residuals have an expected value of zero (Brown *et al.,* 1975). To check for deviations from the expected value of zero, the CUSUM and CUSUMQ of recursive residuals are plotted against the order variable. Symmetric confidence lines above and below the zero value allow definitions of a confidence band beyond which the CUSUM and CUSUMQ plots should not pass, for a selected significance level, if the regression parameters are stable (Brown *et al.,* 1975). The Microfit 5.01 package applied in the study selects the 5% significance level by default. Finally, in both the CUSUM and CUSUMQ tests, the points at which the plots cross the confidence lines give some indication of value(s) of the ordering variable associated with parameter change (Brown *et al.,* 1975).

The error correction representation of Model 1 (equation 6.15) is as follows:

ECM for Model 1: Impact of aggregate public debt on economic growth

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \alpha_{2i}\Delta PD_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta I_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\,\Delta L_{t-i}$$

$$+ \sum_{i=0}^{n} \alpha_{5i}\Delta FB_{t-i} + \sum_{i=0}^{n} \alpha_{6i}\Delta TOP_{t-i} + \sum_{i=0}^{n} \alpha_{7i}\Delta S_{t-i} + \sum_{i=0}^{n} \alpha_{8i}\Delta TOT_{t-i}$$

$$+ \omega_1 ECM_{t-1} + \mu_{1t} \ldots\ldots\ldots\

$$\ldots\ldots\ldots

$$+ \sum_{i=0}^{n} \beta_5 \Delta FB_{t-i} + \sum_{i=0}^{n} \beta_6 \Delta TOP_{t-i} + \sum_{i=0}^{n} \beta_{7i} \Delta S_{t-i} + \sum_{i=0}^{n} \beta_{8i} \Delta TOT_{t-i}$$

$$+ \emptyset_1 y_{t-1} + \emptyset_2 PDS_{t-1} + \emptyset_3 I_{t-1} + \emptyset_4 L_{t-1} + \emptyset_5 FB_{t-1} + \emptyset_6 TOP + \emptyset_7 S_{t-1}$$

$$+ \emptyset_8 TOT_{t-1} + \mu_{3t} \ldots\ldots\ldots\

and Model 3, are run for each of the three study countries with an established cointegration relationship.

6.3.3 Model 4: Multivariate Granger-causality test

Before estimating the Granger-causality models, the study tests the cointegration among the variable in the causality models. The presence of cointegration between public debt and economic growth, and between public debt service and economic growth signifies the existence of Granger-causality at least in one direction. However, cointegration does not specify the direction of causality between the variables. Tests are required to establish the direction of causality between public debt and economic growth, and between public debt service and economic growth. The short-run causality is examined using the joint significance F-statistic of the lagged explanatory variables while the long-run Granger-causality is tested using the t-statistic on the lagged error term which must be negative and statistically significant (Shahbaz *et al.,* 2011; Narayan & Smyth, 2009; Odhiambo, 2009).

Model 4a: ECM-based cointegration model: Public debt and economic growth

A system of cointegration equations associated with the multivariate Granger-causality models for Model 4a are in equations 6.21 to 6.24:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \alpha_{2i}\Delta PD_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\Delta FB_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\Delta S_{t-i}$$

$$+ \alpha_5 y_{t-1} + \alpha_6 PD_{t-1} + \alpha_7 FB_{t-1} + \alpha_8 S_{t-1} + \mu_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.21)$$

$$\Delta PD_t = \beta_0 + \sum_{i=0}^{n} \beta_{1i}\Delta y_{t-i} + \sum_{i=1}^{n} \beta_{2i}\Delta PD_{t-i} + \sum_{i=0}^{n} \beta_{3i}\Delta FB_{t-i} + \sum_{i=0}^{n} \beta_{4i}\Delta S_{t-i}$$

$$+ \beta_5 y_{t-1} + \beta_6 PD_{t-1} + \beta_7 FB_{t-1} + \beta_8 S_{t-1} + \mu_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.22)$$

$$\Delta FB_t = \delta_0 + \sum_{i=0}^{n} \delta_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \delta_{2i}\Delta PD_{t-i} + \sum_{i=1}^{n} \delta_{3i}\Delta FB_{t-i} + \sum_{i=0}^{n} \delta_{4i}\Delta S_{t-i}$$

$$+ \delta_5 y_{t-1} + \delta_6 PD_{t-1} + \delta_7 FB_{t-1} + \delta_8 S_{t-1} + \mu_{3t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.23)$$

$$\Delta S_t = \rho_0 + \sum_{i=0}^{n} \rho_{1i} \Delta y_{t-i} + \sum_{i=0}^{n} \rho_{2i} \Delta PD_{t-i} + \sum_{i=0}^{n} \rho_{3i} \Delta FB_{t-i} + \sum_{i=1}^{n} \rho_{4i} \Delta S_{t-i}$$

$$+ \rho_5 y_{t-1} + \rho_6 PD_{t-1} + \rho_7 FB_{t-1} + \rho_8 S_{t-1} + \mu_{4t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.24)$$

Where:

y = annual growth rate of real GDP per capita (a proxy for economic growth);

PD = the stock of public debt as a share of GDP (a proxy for public debt);

FB = fiscal balance as a share of GDP (a proxy for fiscal balance);

S = the share of savings in GDP (a proxy for gross domestic savings);

$\alpha_0,\ \beta_0,\ \delta_0,\ \rho_0$ = the intercepts;

$\alpha_1 - \alpha_4,\ \beta_1 - \beta_4,\ \delta_1 - \delta_4,\ \rho_1 - \rho_4$ = the short-run regression coefficients;

$\alpha_5 - \alpha_8, \beta_5 - \beta_8,\ \delta_5 - \delta_8,\ \rho_5 - \rho_8$ = the long-run regression coefficients;

$\mu_1 - \mu_4$ = the mutually independent white-noise residuals;

Δ = the difference operator;

n = the maximum lag length; and

t = the period in years.

The ECM-ARDL cointegration models, Model 4a (equations 6.21 – 6.24), are run on Zambia, Zimbabwe and South Africa.

ECM-based Granger-causality model: Public debt and economic growth (Model 4a)

Following the work of Donayre and Taivan (2017), Kumar and Woo (2010) and Afonso (1993), the ECM-based multivariate Granger-causality models in this study are presented in equations 6.25 to 6.28:

$$\Delta y_t = \alpha_0 + \sum_{i=1}^{n} \alpha_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \alpha_{2i} \Delta PD_{t-i} + \sum_{i=1}^{n} \alpha_{3i} \Delta FB_{t-i} + \sum_{i=1}^{n} \alpha_{4i} \Delta S_{t-i}$$

$$+ \alpha_9 ECM_{t-1} + \mu_{1t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\

$$\Delta FB_t = \delta_0 + \sum_{i=1}^{n} \delta_{1i}\Delta y_{t-i} + \sum_{i=1}^{n} \delta_{2i}\Delta PD_{t-i} + \sum_{i=1}^{n} \delta_{3i}\Delta FB_{t-i} + \sum_{i=1}^{n} \delta_{4i}\Delta S_{t-i}$$

$$+ \delta_9 ECM_{t-1} + \mu_{3t} \quad \ldots\ldots\ldots\

$$\Delta PDS_t = \psi_0 + \sum_{i=0}^{n} \psi_{1i}\Delta y_{t-i} + \sum_{i=1}^{n} \psi_{2i}\Delta PDS_{t-i} + \sum_{i=0}^{n} \psi_{3i}\Delta FB_{t-i} + \sum_{i=0}^{n} \psi_{4i}\Delta S_{t-i}$$

$$+ \psi_5 y_{t-1} + \psi_6 PDS_{t-1} + \psi_7 FB_{t-1} + \psi_8 S_{t-1} + \varepsilon_{2t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.30)$$

$$\Delta FB_t = \upsilon_0 + \sum_{i=0}^{n} \upsilon_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \upsilon_{2i}\Delta PDS_{t-i} + \sum_{i=1}^{n} \upsilon_{3i}\Delta FB_{t-i} + \sum_{i=0}^{n} \upsilon_{4i}\Delta S_{t-i}$$

$$+ \upsilon_5 y_{t-1} + \upsilon_6 PDS_{t-1} + \upsilon_7 FB_{t-1} + \upsilon_8 S_{t-1} + \varepsilon_{3t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6.31)$$

$$\Delta S_t = \eta_0 + \sum_{i=0}^{n} \eta_{1i}\Delta y_{t-i} + \sum_{i=0}^{n} \eta_{2i}\Delta PDS_{t-i} + \sum_{i=0}^{n} \eta_{3i}\Delta FB_{t-i} + \sum_{i=1}^{n} \eta_{4i}\Delta S_{t-i}$$

$$+ \eta_5 y_{t-1} + \eta_6 PDS_{t-1} + \eta_7 FB_{t-1} + \eta_8 S_{t-1} + \varepsilon_{4t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (6.32)$$

Where:

y = annual growth rate of real GDP per capita (a proxy for economic growth);

PDS = the stock of public debt service as a share of GDP (a proxy for public debt service);

FB = fiscal balance as a share of GDP (a proxy for fiscal balance);

S = share of savings in GDP (a proxy for gross domestic savings);

$\phi_0,\ \psi_0,\ \upsilon_0, \eta_0$ = the intercepts;

$\phi_1 - \phi_4, \psi_1 - \psi_4, \upsilon_1 - \upsilon_4,\ \eta_1 - \eta_4$ = the short-run regression coefficients;

$\phi_5 - \phi_8,\ \psi_5 - \psi_8,\ \upsilon_5 - \upsilon_8,\ \eta_5 - \eta_8$ = the long-run regression coefficients;

$\varepsilon_1 - \varepsilon_4$ = the mutually independent white-noise residuals;

Δ = the difference operator;

n = the maximum lag length; and

t = the period in years.

The ECM-ARDL cointegration models, Model 4b (equations 6.29 to 6.32), are run on Zambia, Zimbabwe and South Africa.

ECM-based Granger-causality model: Public debt service and economic growth (Model 4b)

$$\Delta y_t = \phi_0 + \sum_{i=1}^{n} \phi_{1i} \Delta y_{t-i} + \sum_{i=1}^{n} \phi_{2i} \Delta PDS_{t-i} + \sum_{i=1}^{n} \phi_{3i} \Delta FB_{t-i} + \sum_{i=1}^{n} \phi_{4i} \Delta S_{t-i}$$

$$+ \phi_9 ECM_{t-1} + \varepsilon_{1t} \quad \ldots\ldots\ldots\

The ECM-based Granger-causality models are run on Zambia, Zimbabwe and South Africa.

6.4 Data source and definition of variables

6.4.1 Data source

This study takes a quantitative research approach, and it uses annual time-series data to develop all analytical models. The study period stretches from 1970 to 2017. The primary source of data for all the three Southern African study countries was the World Bank Development Indicators database (World Bank, 2018a). The data sources for domestic and foreign public debt were the central bank for each respective study country.

6.4.2 Definition of variables

The annual growth rate of real GDP per capita is a proxy for economic growth (y) in this study. The annual growth rate of real GDP per capita is dynamic and extensively used by contemporary researchers across the world. This variable is an indicator of how an economy is performing in terms of productivity, consumption and investment. Consequently, it defines the government's borrowing requirements and its ability to pay back debts and invest in industrial sectors. Thus, the annual growth rate of real GDP per capita summarises numerous critical country-specific economic and welfare information. Several previous studies, such as IMF (2020), Eberhardt (2019), Eberhardt and Presbitero (2015), and Kourtellos *et al.* (2013) used the annual growth rate of real GDP per capita as a measure of economic growth.

Public debt (PD) in this study measures the level of the government's gross domestic and foreign indebtedness. This variable is an indicator of both the flow and usage of public finances. Following Kumhof and Tanner (2005), public debt is a summation of government financial contingency liabilities (domestic and foreign), largely debt securities and loans. Domestic public debt (DPD) includes government financial contingency liabilities denominated in the local currency, while foreign public debt (FPD) denotes government financial contingency liabilities denominated in foreign currency. Public debt service (PDS) defines all financial expenditures made by the

government towards contracted monetary contingency obligations (IMF, 2003c). Both public debt stocks and public debt service payments have been used in empirical studies to assess the economy's macroeconomic and financial stability (Presbitero, 2012a; 2012b; IMF, 2010b).

In addition to the public debt (PD), domestic public debt (DPD), foreign public debt (FPD), public debt service (PDS), and an annual growth rate of real GDP per capita (y) variables, six control variables were added in Model 1, Model 2, and Model 3. These additional variables are gross domestic investment (I), labour force participation rate (L), fiscal balance (FB) and trade openness (TOP), gross domestic savings (S), and terms of trade (TOT). Finally, in Model 4a, and Model 4b, besides the annual growth rate of real GDP per capita (y), public debt (PD) and public debt service (PDS), two mediating variables were added, fiscal balance (FB) and gross domestic savings (S). The description of the variables used in Model 1, Model 2, Model 3 and Model 4 is presented in Table 6.1.

Table 6.1: Summary of variables used in the study

Notation	Variable description
y	Annual growth rate of real GDP per capita (a proxy for economic growth)
PD	Share of public debt in GDP (a proxy for public debt)
DPD	Share of domestic public debt in GDP (a proxy for domestic public debt)
FPD	Share of foreign public debt in GDP (a proxy for foreign public debt)
I	Share of gross fixed capital formation in GDP (a proxy for gross domestic investment)
L	Share of economically active population aged between 15 and 64 years in total working-age population (a proxy for labour)
FB	Share of fiscal balance in GDP (a proxy of fiscal balance)
TOP	Sum of imports and exports as a ratio of GDP (a proxy for trade openness)
PDS	Share of public debt service payments in GDP (a proxy for public debt service)
S	Share of gross domestic savings in GDP (a proxy for savings)
TOT	Share of trade balance in GDP (a proxy for terms of trade)

6.5 Conclusion

This chapter discussed the methodological framework employed in this study to examine the impact of aggregate public debt on economic growth; the relative impact of domestic and foreign public debt on economic growth; the impact of public debt service on economic growth; the causal relationship between public debt and economic growth; and the causal relationship between public debt service and economic growth. The chapter also reflected on the estimation techniques used in the study. The theoretical and empirical model specifications and those underpinning each model were presented in the second section of this chapter. The estimation techniques used were discussed in the third section, while data sources and definitions of variables used in the study were explained in the fourth section of the chapter.

CHAPTER 7

ECONOMETRIC ANALYSIS AND EMPIRICAL FINDINGS

7.1 Introduction

This chapter discusses the econometric analysis and the empirical findings from the three selected Southern African countries, that is, Zambia, Zimbabwe and South Africa, based on the specified estimation techniques and empirical models discussed in Chapter Six. The study utilises the ARDL bounds testing approach to examine the dynamic impact of both aggregate public debt and public debt service on economic growth, as well as the relative impact of domestic and foreign public debt on economic growth. The study also employs the ECM-based Granger-causality model to examine the causality between aggregate public debt and economic growth, and between public debt service and economic growth in the three study countries – Zambia, Zimbabwe and South Africa.

In this respect, the research uses four empirical models – Model 1, Model 2, Model 3 and Model 4. Model 1 examines the impact of aggregate public debt (PD) on economic growth (y). Model 2 investigates the relative impact of domestic public debt (DPD) and foreign public debt (FPD) on economic growth (y). Model 3 explores the effect of public debt service (PDS) on economic growth (y). In the three models, Model 1, Model 2, and Model 3, six control variables were added, namely, investment (I), labour (L), fiscal balance (FB), trade openness (TOP), savings (S), and terms of trade (TOT).

Finally, Model 4 has two sections. Model 4a tests the Granger-causality between aggregate public debt and economic growth and Model 4b examines the Granger-causality between public debt service and economic growth within a multivariate setting, with FB and S as the intermittent variables. To this end, the multivariate Granger-causality models (Model 4a and Model 4b) are such that multivariate Model 4a consists of PD, y, FB, and S; while the multivariate Model 4b consists of PDS, y, FB and S.

Chapter 7 has five major sections. Section 7.2 analyses unit root tests for all variables in Models 1, 2, 3 and 4. Section 7.3 covers the econometric analysis and empirical

findings from the dynamic impact models – Models 1, 2 and 3. The section is sub-divided into four subsections for the three study countries – Zambia, Zimbabwe and South Africa:

- 7.3.1 presents the econometric analysis and empirical findings of Model 1;
- 7.3.2 presents the econometric analysis and empirical findings of Model 2;
- 7.3.3 presents the econometric analysis and empirical findings of Model 3; and
- 7.3.4 gives a summary of the econometric analysis and empirical findings of the dynamic impact models.

Section 7.4 gives the econometric analysis and the empirical findings from the dynamic Granger-causality model – Model 4 – for the three study countries, starting with Zambia, followed by Zimbabwe, lastly South Africa. Section 7.5 concludes the chapter.

7.2. Unit root results for variables in Models 1, 2, 3 and 4 (all study countries)

Before undertaking the empirical analysis, it is important to establish the order of integration in the analysed series to ensure that no variable is integrated of order two or higher. Accordingly, the study uses three different unit root tests, namely, the Dickey-Fuller Generalised Least Square (DF-GLS), Phillips-Perron (PP) and Perron, 1997 (PPURoot). In the three unit root tests, the null hypothesis is that the time-series contains a unit root, that is, it is nonstationary, and the alternative hypothesis is that it is stationary (Gujarati, 2004: 815). The computed absolute value of the statistic is compared with 1%, 5% and 10% critical values (Gujarati, 2004: 816). The decision rule is that if the computed absolute value of the statistic is more (less) than the critical values, then the time-series is stationary (not stationary) (Gujarati, 2004: 816). The summarised results of stationarity tests for all the analysed series are presented in Tables 7.1(a), 7.1(b) and 7.1(c).

Table 7.1(a): DF-GLS stationarity results of all variables – Zambia, Zimbabwe and South Africa

Dickey-Fuller Generalised Least Square (DF-GLS) Test												
Variable	**ZAMBIA**				**ZIMBABWE**				**SOUTH AFRICA**			
	Stationarity of all variables in levels		**Stationarity of all variables in first difference**		**Stationarity of all variables in levels**		**Stationarity of all variables in first difference**		**Stationarity of all variables in levels**		**Stationarity of all variables in first difference**	
	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend
y	-3.295***	-6.219***	-	-	-3.656***	-4.201***	-	-	-4.928***	-4.946***	-	-
PD	-1.890*	-2.616	-	-6.131***	-0.377	-2.614	-6.309***	-6.511***	-1.692*	-1.921	-	-5.444***
PDS	-1.757	-3.739	-8.682***	-8.744***	-1.681*	-1.809	-	-7.316***	-1.336	-2.279	-5.131***	-6.500***
DPD	-0.357	-1.402	-6.029***	-6.620***	-3.132**	-3.668**	-	-	-1.008	-2.273	-2.680***	-6.793***
FPD	-1.318	-1.383	-5.424***	-5.538***	-1.451	-2.350	-7.031***	-7.198***	-1.779	-2.626	-4.203***	-4.573***
I	-1.078	-1.394	-6.476***	-6.771***	-2.480**	-2.605	-	-5.933***	-0.815	-1.702	-5.370***	-4.793***
L	-1.615	-2.039	-1.866*	-2.900*	-0.120	-3.187**	-4.390***	-	-1.447	-3.294**	-4.977***	-
FB	-3.267***	-5.167***	-	-	-2.626***	-2.127	-	-5.482***	-2.648***	-2.794	-	-6.537***
TOP	-2.045**	-2.874	-	-6.307***	-1.244	-2.205	-7.291***	-8.327***	-1.964**	-2.315	-	-7.251***
S	-1.538	-1.982	-5.953***	-7.935***	-0.879	-1.996	-9.737***	-9.954***	-1.279	-1.765	-4.932***	-5.566***
TOT	-1.513	-3.263**	-4.570***	-	-1.244	-2.062	-6.563***	-6.648***	-1.665*	-2.618	-	-6.643***

*Note: *, ** and *** denote stationarity at 10%, 5% and 1% significance levels, respectively.*

Table 7.1(b): PP stationarity results of all variables – Zambia, Zimbabwe and South Africa

Variable	Phillips-Perron (PP) Test											
	ZAMBIA				ZIMBABWE				SOUTH AFRICA			
	Stationarity of all variables in levels		Stationarity of all variables in first difference		Stationarity of all variables in levels		Stationarity of all variables in first difference		Stationarity of all variables in levels		Stationarity of all variables in first difference	
	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend
y	-5.592***	-6.116***	-	-	-4.444***	-4.378***	-	-	-4.739***	-4.683***	-	-
PD	-1.857	-2.689	-7.378***	-7.442***	-1.077	-2.720	-6.577***	-6.516***	-1.457	-1.533	-5.152***	-5.316***
PDS	-1.752	-3.673**	-13.435***	-	-1.735	-1.937	-7.166***	-7.264***	-2.930*	-2.878	-	-7.056***
DPD	-1.096	-1.367	-6.748***	-6.711***	-3.098**	-3.814**	-	-	-1.964	-2.363	-7.459***	-7.392***
FPD	-1.521	-1.451	-5.239***	-5.860***	-1.826	-2.241	-7.687***	-8.146***	-1.394	-2.195	-4.464***	-4.389***
I	-1.065	-1.436	-6.576***	-6.819***	-2.454	-2.606	-5.865***	-5.777***	-1.477	-1.477	-5.923***	-5.859***
L	-1.702	-0.164	-5.930***	-7.617***	-1.033	-2.157	-4.300***	-4.274***	-2.641*	-3.247*	-	-
FB	-3.302**	-5.204***	-	-	-2.150	-2.126	-5.396***	-5.297***	-2.772*	-2.754	-	-6.703***
TOP	-2.888**	-2.999	-	-10.254***	-1.466	-2.034	-8.780***	-8.868***	-2.028	-2.207	-7.651***	-7.552***
S	-2.714*	-2.862	-	-10.161***	-1.301	-2.973	-10.096***	-9.980***	-1.396	-2.075	-5.842***	-5.771***
TOT	-3.532**	-3.272*	-	-	-2.258	-2.290	-6.617***	-6.573***	-1.924	-2.404	-6.670***	-7.652***

*Note: *, ** and *** denote stationarity at 10%, 5% and 1% significance levels, respectively.*

Table 7.1(c): PPURoot stationarity results of all variables – Zambia, Zimbabwe and South Africa

Variable	Perron, 1997 (PPURoot) Test											
	ZAMBIA				ZIMBABWE				SOUTH AFRICA			
	Stationarity of all variables in levels		Stationarity of all variables in first difference		Stationarity of all variables in levels		Stationarity of all variables in first difference		Stationarity of all variables in levels		Stationarity of all variables in first difference	
	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend	Without trend	With trend
y	-6.831***	-6.917***	-	-	-6.169***	-6.429***	-	-	-5.578**	-5.588**	-	-
PD	-4.194	-4.157	-8.257***	-8.169***	-4.555	-5.034	-7.629***	-7.938***	-2.319	-2.781	-6.072***	-6.006***
PDS	-4.590	-4.614	-6.444***	-6.368***	-4.532	-4.515	-8.187***	-8.575***	-3.902	-3.769	-7.688***	-7.636***
DPD	-4.183	-4.045	-9.735***	-9.748***	-5.499**	-5.388*	-	-	-3.478	-2.879	-5.470**	-6.157**
FPD	-3.335	-4.748	-8.244***	-8.345***	-7.040***	-5.551*	-	-	-4.646	-4.488	-5.879**	-5.798**
I	-6.979***	-6.865***	-	-	-3.516	-3.517	-5.660**	-5.408*	-3.425	-3.419	-6.346***	-6.423***
L	-3.860	-3.668	-5.361*	-5.480*	-3.586	-3.691	-5.163*	-5.448*	-4.057	-4.306	-6.910***	-8.300***
FB	-5.802**	-8.534***	-	-	-4.259	-3.515	-6.327***	-6.725***	-3.340	-3.274	-7.596***	-7.253***
TOP	-3.084	-3.292	-6.812***	-6.787***	-3.781	-4.000	-9.393***	-9.558***	-3.584	-3.754	-7.766***	-7.780***
S	-4.864	-5.109	-8.906***	-9.087***	-5.217*	-4.889	-	-10.555***	-3.310	-3.491	-7.049***	-7.508***
TOT	-6.897***	-7.717***	-	-	-3.451	-3.225	-7.608***	-7.525***	-4.208	-4.197	-7.286***	-7.941***

*Note: *, ** and *** denote stationarity at 10%, 5% and 1% significance levels, respectively.*

Tables 7.1(a) to 7.1(c) shows that the stationarity of the series varies across the three study countries depending on the stationarity testing method used, that is, the DF-GLS (Table 7.1(a)), PP (Table 7.1(b)) and PPURoot (Table 7.1(c)), and whether a trend is incorporated or not. The lag lengths in DF-GLS, PP and PPURoot were automatically selected by SIC, Newey-West bandwidth and PPU Root test truncation lag techniques, respectively.

Overall, however, in Tables 7.1(a) to 7.1(c), all the variables are stationary in levels [I(0)] or in first difference [I(1)]. These stationarity results validate the appropriateness of the ARDL bounds estimation technique to test for cointegration among all regression variables in the ARDL models using ordinary least squares estimation. The study uses the bounds F-statistic test to check for an existing long-run relationship between economic growth and its determinants in the three study countries. The long-run relationship of all the study series is ascertained when lagged variables in levels are statistically significant. The study, therefore, proceeds to test whether the variables are cointegrated or not. If cointegrated, the estimation of long- and short-run regression coefficients of each ARDL model will follow.

7.3 Econometric analysis and empirical results for impact models – ARDL bounds test

7.3.1 Econometric analysis for Model 1: Impact of aggregate public debt on economic growth

7.3.1.1 Cointegration test for Model 1

Since the stationarity results of all the variables in Model 1 for the three study countries are integrated of order 0 [I(0)] or 1 [I(1)], the study tests the possibility of cointegration among the variables used using the ARDL bounds test. The results of the ARDL bounds F-statistic tests for Model 1 in all the study countries are presented in Table 7.2.

Table 7.2: Bounds F-statistic results for cointegration of Model 1 (all the study countries)

Country	Dependent Variable	Function	F-statistic	Cointegration status
Zambia	y	F(y| PD,I,L,FB,TOP,S,TOT)	4.614***	Cointegrated
Zimbabwe	y	F(y| PD,I,L,FB,TOP,S,TOT)	5.291***	Cointegrated
South Africa	y	F(y| PD,I,L,FB,TOP,S,TOT)	3.641**	Cointegrated
Asymptotic critical values (unrestricted intercept and no trend)				

Pesaran *et al.* (2001: 300) critical values [Table CI(iii) Case III]	10%		5%		1%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.03	3.13	2.32	3.50	2.96	4.26

*Note: ** and *** denote statistical significance at 5% and 1%, respectively.*

In Table 7.2, the calculated F-statistics in the three study countries is 4.614, 5.291 and 3.641 for Zambia, Zimbabwe and South Africa, respectively. These F-statistic values were compared with the Pesaran *et al*. (2001: 300) asymptotic critical values. The calculated F-statistics results in the three study countries are above the Pesaran *et al.*'s (2001) upper bound critical values at 1%, 1% and 5% significance levels, respectively. Based on these results, the study rejects the null hypothesis of no cointegration in all the study countries. That is, the results establish that a long-run level relationship exists between economic growth conditioned on public debt, investment, labour, fiscal balance, trade openness, savings and terms of trade.

7.3.1.2 Coefficient estimation for Model 1

The study uses the ARDL approach by Pesaran *et al.* (2001) to estimate the short- and long-run regression coefficients of variables in Model 1 in the three study countries – Zambia, Zimbabwe and South Africa. This study selected the optimal lag lengths for each variable in the estimated models using either the BIC or AIC. According to Cheung and Lai (1993), the model with the lowest standard error of regression, the lowest residual sum of squares and the lowest mean of the dependent variable is selected. Accordingly, based on the robustness of the results, the study selected for Model 1: AIC-based ARDL (2, 1, 2, 0, 3, 0, 3, 2) for Zambia; BIC-based ARDL (2, 1,

0, 1, 0, 0, 0, 1) for Zimbabwe; and AIC-based ARDL (3, 3, 1, 3, 3, 1, 3, 3) for South Africa. Table 7.3 presents the empirical long- and short-run coefficients of the selected ARDL models.

Table 7.3: Estimation of long-run and short-run coefficients for Model 1 (all the study countries)

Panel A: Long-run coefficients (Dependent variable is y)

	Zambia		Zimbabwe		South Africa	
Regressors	**Coefficient**	**T-ratio[p-value]**	**Coefficient**	**T-ratio[p-value]**	**Coefficient**	**T-ratio[p-value]**
C	-12.090***	-2.932 [0.008]	-56.458**	-2.680 [0.011]	86.627**	2.724 [0.014]
PD	0.019*	1.755 [0.091]	-0.203*	-1.742 [0.091]	-0.301*	-1.809 [0.083]
I	0.249*	1.888 [0.071]	0.477**	2.227 [0.033]	0.194*	1.791 [0.094]
L	0.089*	1.725 [0.095]	0.579*	1.997 [0.054]	-0.294**	-2.448 [0.026]
FB	-0.446*	-1.707 [0.099]	-0.007*	-1.845 [0.087]	-0.072**	-2.613 [0.018]
TOP	-0.334**	-2.534 [0.018]	0.160	1.285 [0.208]	0.160*	2.064 [0.055]
S	0.537*	1.924 [0.066]	0.245	1.193 [0.241]	0.177*	1.988 [0.056]
TOT	-0.123	-0.231 [0.819]	-0.652**	-2.367 [0.024]	-0.283	-1.593 [0.130]

Panel B: Short-run coefficients (Dependent variable is Δy)						
	Zambia		Zimbabwe		South Africa	
Regressors	**Coefficient**	**T-ratio[p-value]**	**Coefficient**	**T-ratio[p-value]**	**Coefficient**	**T-ratio[p-value]**
Δy(1)	0.216*	1.770 [0.087]	0.112**	2.501 [0.026]	0.243*	1.912 [0.069]
Δy(2)	-	-	-	-	0.264	1.377 [0.181]
ΔPD	0.042*	2.015 [0.053]	-0.596***	-4.669 [0.000]	-0.049	-0.984 [0.339]
ΔPD(1)	-	-	-	-	0.090	0.614 [0.545]
ΔPD(2)	-	-	-	-	-0.224*	-1.900 [0.070]
ΔI	0.273*	1.787 [0.086]	0.439*	1.966 [0.057]	0.567**	2.114 [0.045]
ΔI(1)	0.223*	1.855 [0.078]	-	-	-	-
ΔL	0.823	1.614 [0.117]	-0.526	-0.758 [0.454]	-0.183	-0.326 [0.747]
ΔL(1)	-	-	-	-	0.535	0.951 [0.351]
ΔL(2)	-	-	-	-	0.873	1.570 [0.130]
ΔFB	-0.076	-0.743 [0.463]	-0.006***	-3.966 [0.000]	0.068	0.305 [0.763]
ΔFB(1)	0.182	1.337 [0.191]	-	-	-0.073***	-3.005 [0.006]
ΔFB(2)	-0.181**	-2.050 [0.049]	-	-	-0.561**	-2.442 [0.022]
ΔTOP	-0.322**	-2.513 [0.018]	0.147	1.223 [0.229]	-0.091	-0.920 [0.367]
ΔS	0.190	1.237 [0.226]	0.225	1.277 [0.210]	0.330	1.578 [0.128]
ΔS(1)	-0.054	-0.353 [0.727]	-	-	0.318*	1.803 [0.084]
ΔS(2)	0.200*	1.808 [0.081]	-	-	0.419**	2.565 [0.017]
ΔTOT	0.382	0.842 [0.406]	0.075	0.255 [0.800]	0.138	0.773 [0.447]
ΔTOT(1)	-0.883*	-1.955 [0.060]	-	-	0.364	1.460 [0.157]
ΔTOT(2)	-	-	-	-	0.052	0.338 [0.738]
ECM(-1)	-0.263***	-5.481 [0.000]	-0.519***	-6.471 [0.000]	-0.341***	-4.126 [0.000]

	Zambia	Zimbabwe	South Africa
R-squared	0.872	0.790	0.830
R-bar-squared	0.713	0.634	0.559
F-statistic	4.700 [0.000]	5.575 [0.000]	3.066 [0.001]
DW statistic	1.742	2.174	2.037
SE of Regression	3.433	4.807	1.484
Residual Sum of Squares	94.615	62.388	37.421
Akaike Info. Criterion	-86.1299	-119.523	-89.702
Schwartz Bayesian Criterion	-97.7195	-127.363	-104.298

*Note: *, ** and *** signify statistical significance at 10%, 5% and 1% levels, respectively.*

Empirical results of Model 1 for Zambia

The long-run empirical results of Model 1 for Zambia reported in Table 7.3 Panel A, indicate that aggregate public debt (PD) is positive and statistically significant. This implies that an increase in total public debt leads to a rise in economic growth (y) in Zambia, in the long run. The finding suggests that public debt in Zambia has, on average, largely been used to expand the tradable sector. In other words, the results suggest that a considerable amount of public debt funded productive expenditure, hence impacting positively on economic activity.

The adoption of stringent expenditure, financial, economic and debt reforms since the late 1990s might have helped to reduce and, in some instances, maintain sustainable public debt levels and channel new debt into productive sectors (IMF, 2017a; MOF, 2014a; GRZ, 2007; World Bank, 2001a). For instance, in 2004, the country implemented several private investment growth initiatives under the Private Sector Development Reform Program (PSDRP), while newly contracted government debt was committed to productive expenditures, such as energy sector expansion and transport sector development (GRZ, 2017a; 2006b; 2006c). This finding, although contrary to the study expectations, is not unique to Zambia, and compares favourably with other previous studies on the subject, such as Teles and Mussolini (2014); Dreger and Reimers (2013), and DeLong and Summers (2012), among others.

The long-run results of other variables for Model 1 presented in Table 7.3 Panel A reveal that the coefficients of investment (I), labour (L) and savings are positive and statistically significant, suggesting that these three variables positively impact economic growth in Zambia, in the long run. Contrary to the study expectations, the coefficients of fiscal balance (FB) and trade openness (TOP) are negative and statistically significant, implying that fiscal balance and trade openness negatively impact economic growth in Zambia, in the long run. The incessant budgetary deficits since the 1980s and increased inflows of finished products might have contributed to the noticeable negative impact on long-run economic growth in Zambia (GRZ, 2015b). Finally, the coefficient of terms of trade (TOT) is statistically insignificant.

The short-run results reported in Table 7.3 Panel B show that the coefficient of public debt (ΔPD) is positive and statistically significant. This implies that a rise in public debt in Zambia in the current period can lead to an increase in economic growth (y) in the short run. This finding, although contrary to the study expectations, is not unique to

Zambia, as some research also confirms a positive impact of aggregate public debt on economic growth in the short run (Gómez-Puig & Sosvilla-Rivero, 2018).

The short-run results for other variables indicate that the coefficient of economic growth (Δy(1)) is positive and statistically significant, implying that economic growth lagged one period can positively influence current economic growth in Zambia. Also, the coefficients of investment [ΔI and ∆I(1)] and savings (∆S(2)) are positive as expected and statistically significant. This finding entails that changes in investment in the current and one past period, as well as changes in savings lagged two periods, can lead to an increase in economic growth in Zambia in the short run. Further, the short-run results reveal that a change in labour (∆L) has no significant immediate effect on economic growth in Zambia.

Also, the short-run results of Model 1 show that the coefficients of fiscal balance (∆FB(2)) and terms of trade (∆TOT(1)) are unexpectedly negative and statistically significant. This suggests that changes in fiscal balance and terms of trade in the past periods negatively impact economic growth in Zambia, in the short run. The result implies that the adverse global economic developments during the study period could have eroded the central government revenues, particularly from mineral taxation and commodity exports (see also McCulloch *et al.,* 2000a). It is also possible that the swift rise in both fiscal deficits and debt-financed recurrent government spending could have a possible crowding out effect on productive expenditures and private sector investment, as suggested in UNCTAD (2014). Furthermore, the short-run coefficient of trade openness (∆TOP) is negative and statistically significant, implying that an increase in trade openness in the current period negatively impact economic growth in Zambia, in the short run. Finally, as expected, the error correction term ECM(-1) is found to be negative and statistically significant at 1%, implying that in the event of a shock to the Zambian economy, economic growth adjusts to equilibrium at a rate of 26.3% per annum.

Empirical analysis of Model 1 for Zimbabwe

The long-run results of Model 1 [Panel A] show that the coefficient of public debt (PD) is negative and statistically significant, implying that an increase in public debt in Zimbabwe can lead to a decrease in economic growth rate (y), in the long run. This finding can partly suggest that public debt in Zimbabwe could have caused credit rationing and high interest rates in the economy, resulting in a long-term crowding out

effect on private sector investments (RBZ, 2014: 40; GoZ, 2018b; IMF, 2017b). Also, the high stocks of debt in this country may have contributed to the subdued entrepreneurial activities due to greater economic uncertainties, arising primarily from unpredictable fiscal and monetary policy interventions (IMF, 2014e).

Other long-run results of Model 1 for Zimbabwe reported in Table 7.3 [Panel A] indicate that the coefficients of investment (I) and labour (L) are positive and statistically significant as expected. This implies that these investment and labour have a positive impact on economic growth in Zimbabwe, in the long run. However, the coefficients of fiscal balance (FB) and terms of trade (TOT) are negative and statistically significant, implying that a rise in any of these two variables depresses economic growth in Zimbabwe, in the long run. The uncontrolled increase in domestic interest rates and numerous tax policy revisions and reversals during the period 1980-2017, may be attributed to the financing of these fiscal deficits, which were funded predominantly through public borrowing and money printing (Jones, 2011). In addition, the coefficients of trade openness (TOP) and savings (S) were statistically insignificant.

The short-run results of Model 1 for Zimbabwe reveal that the coefficient of public debt (ΔPD) is negative and statistically significant as expected. This implies that an increase in aggregate public debt in Zimbabwe leads to a reduction in economic growth rate, in the short run. Other short-run results show that economic growth (Δy(1)) and investment (ΔI) have a positive relationship with economic growth. The results further reveal that the coefficient of fiscal balance (ΔFB) is unexpectedly negative and statistically significant. This implies that changes in fiscal balance in the current period impeded economic growth in Zimbabwe, in the short run. This outcome may suggest that either the central government expenditures are not used in high-return productive activities, or the debt proceeds are funding consumptive expenses (Mupunga & Le Roux, 2014).

In addition, the results from other variables show that the coefficients of labour (ΔL), trade openness (ΔTOP), savings (ΔS), and terms of trade (ΔTOT) are statistically insignificant. Finally, as expected, the error correction term ECM(-1) is negative and statistically significant at 1%, implying that in the event of a shock to the Zimbabwean economy, economic growth adjusts to equilibrium at a rate of 51.9% per annum.

Empirical analysis of Model 1 for South Africa

The long-run empirical results of Model 1 for South Africa reported in Panel A of Table 7.3 show that the coefficient of public debt (PD) is negative as expected and statistically significant albeit at 10% level. This implies that in South Africa public debt negatively impacts economic growth (y) in the long run.

Other long-run results of Model 1 for South Africa show that investment (I), trade openness (TOP) and savings (S) have a positive and statistically significant impact on economic growth in South Africa. Consistent with economic growth theory, an increase in any one of these three variables lead to increased economic growth in South Africa, in the long run. The findings of a negative relationship between labour (L), and fiscal balance (FB) is contradictory to study expectations. The negative coefficient of labour may be due to the proxy for labour used, that is, the share of the economically active population aged between 15 and 64 years in the total working-age population. Moreover, the negative impact of fiscal balance suggests that part of the public debt in South Africa was used in low returning investments or consumptive outlays. The coefficient of terms of trade (TOT) was statistically insignificant.

The short-run empirical results for Model 1 for South Africa indicate that although public debt in the current period (ΔPD) has an insignificant impact on economic growth (y), public debt lagged two periods (ΔPD(2)) negatively influence economic growth. This suggests that public debt lagged two periods negatively impact economic growth in South Africa, in the short run.

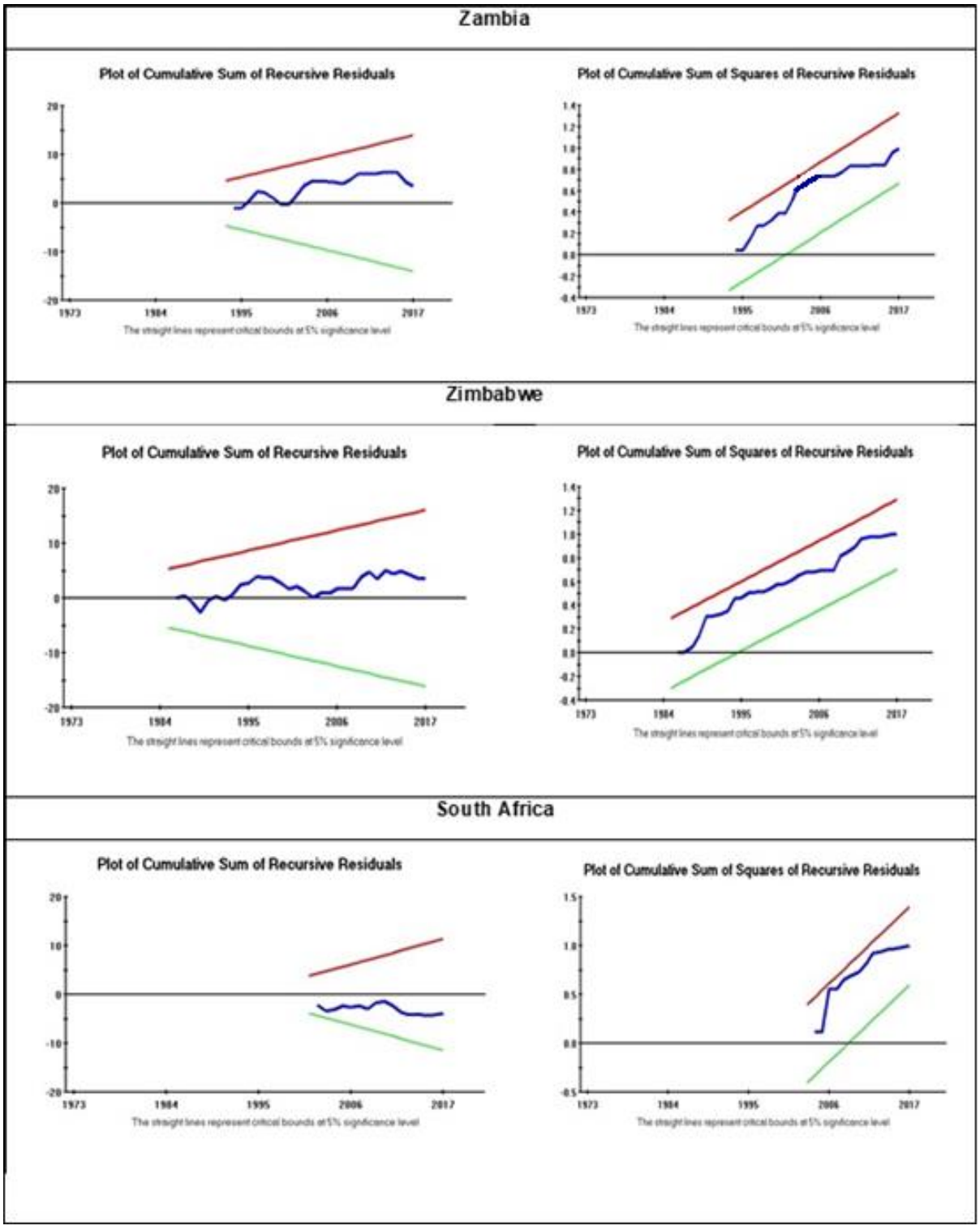
The short-run results of other variables in Model 1 for South Africa reveal that economic growth in one past period (Δy(1)), investment (ΔI) and savings [ΔS(1)) and ΔS(2)] have a statistically significant positive effect on economic growth, in the short run. However, the coefficients of fiscal balance in the prior periods [ΔFB(1) and ΔFB(2)] were negative and statistically significant. This implies changes in fiscal balance in the past period leads to a decrease in economic growth in South Africa in the short run. In addition, labour (ΔL), fiscal balance (ΔFB), savings (ΔS) and terms of trade (ΔTOT) in the current period have no statistically significant impact on economic growth, in the short run. Further, the coefficient on lagged error correction term ECM(-1) is negative and statistically significant at 1%, implying that in the event of a shock

to the South African economy, economic growth adjusts to equilibrium at a rate of 34.1% per annum.

Based on the empirical results of Model 1 reported for Zambia, aggregate public debt tends to contribute significantly to economic growth. This result applies irrespective of whether the impact is estimated in the short or long run. In Zimbabwe and South Africa, aggregate public debt negatively impacts economic growth, regardless of whether the impact analysis was in the short or long run.

The study plotted CUSUM and CUSUMQ to check for Model 1 stability, and the results are presented in Figure 7.1.

Figure 7.1: Plot of CUSUM and CUSUMQ for Model 1



An inspection of the CUSUM and CUSUMQ plots from the recursive estimation of the model presented in Figure 7.1 provides evidence of stability in the relationship between aggregate public debt and economic growth in the study countries. That is, the CUSUM and CUSUMQ plots of Model 1 are within the confidence band at 5% significance level across the study countries. Accordingly, Model 1 passed the stability

test in the study countries, meaning that there is no systematic change in the reported long-run coefficients of the explanatory variables at the 5% level of significance. This result signifies that the estimated coefficients are consistently reliable.

7.3.2 Econometric analysis for Model 2: Impact of disaggregated public debt on economic growth

7.3.2.1 Cointegration test for Model 2

The bounds F-statistics for Model 2 given in Table 7.4 are 4.161, 3.631 and 3.177 for Zambia, Zimbabwe and South Africa, respectively. The calculated F-statistic values in Model 2 are all greater than the upper bound critical values at 1%, 5% and 10% significance levels, correspondingly, also reported in Table 7.4. Although the level of significance varies from one country to the other, the study rejects the null hypothesis of no cointegration in all the study countries.

Table 7.4: Bounds F-statistic results for cointegration of Model 2 (all the study countries)

Country	Dependent Variable	Function	F-statistic	Cointegration status
Zambia	y	F(y|DPD,FPD,I,L,FB,TOP,S,TOT)	4.161***	Cointegrated
Zimbabwe	y	F(y|DPD,FPD,I,L,FB,TOP,S,TOT)	3.631**	Cointegrated
South Africa	y	F(y|DPD,FPD,I,L,FB,TOP,S,TOT)	3.177*	Cointegrated

Asymptotic critical values (unrestricted intercept and no trend)						
Pesaran *et al.* (2001: 300) critical values [Table CI(iii) Case III]	10%		5%		1%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	1.95	3.06	2.22	3.39	2.79	4.10

*Note: *, ** and *** denote statistical significance at 10%, 5% and 1%, respectively.*

Following confirmation of cointegration in the economic growth Model 2 in Zambia, Zimbabwe and South Africa, the study proceeds to estimate the short- and long-run coefficients.

7.3.2.2 Coefficient estimation for Model 2

The optimal lag length for the ARDL models for Zambia, Zimbabwe and South Africa was selected based on the appropriate equation as determined by either the AIC or BIC techniques. Based on the model's explanatory predictive power, the study selected for Model 2: AIC-based ARDL (3, 3, 2, 3, 3, 2, 2, 3, 1) for Zambia; BIC-based ARDL (2, 0, 0, 0, 2, 0, 0, 0, 1) for Zimbabwe; and AIC-based ARDL (3, 3, 1, 1, 3, 3, 3, 1, 1) for South Africa. The long- and short-run regression coefficients of the selected ARDL models are reported in Panel A and B of Table 7.5, respectively.

Table 7.5: Estimation of long-run and short-run coefficients for Model 2 (all the study countries)

Panel A: Long-run coefficients (Dependent variable is y)								
	Zambia			**Zimbabwe**			**South Africa**	
Regressors	**Coefficient**	**T-ratio**	**[p-value]**	**Coefficient**	**T-ratio**	**[p-value]**	**Coefficient**	**T-ratio[p-value]**
C	-41.300***	-3.105	[0.008]	-26.927*	-1.705	[0.098]	62.052**	2.305 [0.034]
DPD	-0.047***	-3.037	[0.009]	-0.309***	-3.121	[0.004]	-0.073	-1.312 [0.207]
FPD	0.022**	2.709	[0.017]	-0.285***	-4.702	[0.000]	-0.094**	-2.573 [0.020]
I	0.439*	1.771	[0.088]	0.138	0.622	[0.538]	0.187*	1.835 [0.084]
L	0.315	1.668	[0.118]	0.459*	1.909	[0.065]	0.092*	1.915 [0.073]
FB	0.235	1.378	[0.180]	-0.096**	-2.153	[0.048]	-0.435**	-2.514 [0.022]
TOP	-0.317**	-2.948	[0.010]	0.163	1.504	[0.142]	-0.113**	-2.232 [0.039]
S	0.285*	1.891	[0.069]	0.187	0.996	[0.327]	0.290**	2.384 [0.029]
TOT	-0.592**	-2.496	[0.026]	-0.214	-0.890	[0.380]	-0.060	-0.629 [0.538]

Panel B: Short-run coefficients (Dependent variable is Δy)						
	Zambia		Zimbabwe		South Africa	
Regressors	**Coefficient**	**T-ratio[p-value]**	**Coefficient**	**T-ratio[p-value]**	**Coefficient**	**T-ratio[p-value]**
Δy(1)	0.193**	2.675 [0.014]	0.127**	2.7242 [0.013]	0.545**	2.302 [0.030]
Δy(2)	0.160	1.037 [0.311]	-	-	0.226	1.342 [0.192]
ΔDPD	-0.134	-0.329 [0.745]	-0.296***	-3.504 [0.001]	0.036	0.383 [0.705]
ΔDPD(1)	-0.089**	-2.512 [0.020]	-	-	0.228**	2.227 [0.035]
ΔDPD(2)	-0.157***	-2.986 [0.007]	-	-	0.068	0.878 [0.388]
ΔFPD	-0.001	-0.036 [0.971]	-0.274***	-4.564 [0.000]	0.078	1.160 [0.257]
ΔFPD(1)	0.083***	3.839 [0.001]	-	-	-	-
ΔI	0.571***	3.341 [0.003]	0.132	0.612 [0.545]	0.101	0.318 [0.753]
ΔI(1)	0.036	0.198 [0.845]	-	-	-	-
ΔI(2)	0.266*	1.752 [0.091]	-	-	-	-
ΔL	0.232***	3.365 [0.003]	0.880	1.287 [0.207]	-0.181	-0.303 [0.764]
ΔL(1)	-0.574	-1.141 [0.266]	0.387*	1.873 [0.070]	0.371*	1.715 [0.099]
ΔL(2)	0.344	1.489 [0.151]	-	-	0.448	1.301 [0.205]
ΔFB	0.026	0.202 [0.841]	-0.092*	-1.978 [0.055]	-0.424*	-1.835 [0.078]
ΔFB(1)	-0.305***	-3.086 [0.003]	-	-	-0.344	-1.325 [0.197]
ΔFB(2)	-	-	-	-	-0.381	-1.629 [0.116]

ΔTOP	-0.226**	-2.615	[0.016]	0.156	1.469	[0.151]	0.066	0.741	[0.466]
ΔTOP(1)	-0.119	-1.081	[0.291]	-	-		0.160*	1.888	[0.071]
ΔTOP(2)	-	-		-	-		0.119	1.667	[0.108]
ΔS	0.402***	3.467	[0.002]	0.180	1.030	[0.311]	0.284	1.641	[0.113]
ΔS(1)	0.130***	2.959	[0.009]	-	-		-	-	
ΔS(2)	-0.315	-1.668	[0.110]	-	-		-	-	
ΔTOT	-0.300***	-3.105	[0.005]	-0.564*	-2.007	[0.053]	-0.072	-0.651	[0.521]
ECM(-1)	-0.485***	-4.931	[0.000]	-0.360***	-7.471	[0.000]	-0.522***	-4.039	[0.000]

	Zambia	**Zimbabwe**	**South Africa**
R-squared	0.907	0.691	0.869
R-bar-squared	0.707	0.576	0.662
F-statistic	4.545 [0.000]	5.981 [0.000]	4.185 [0.000]
DW statistic	1.731	1.969	1.831
SE of Regression	2.446	4.583	1.299
Residual Sum of Squares	33.726	72.028	28.726
Akaike Info. Criterion	-68.822	-37.684	-81.753
Schwartz Bayesian Criterion	-89.125	-49.427	-107.046

*Note: *, ** and *** signify statistical significance at 10%, 5% and 1% levels, respectively.*

Empirical analysis of Model 2 for Zambia

The long-run results of Model 2 for Zambia, reported in Table 7.5 Panel A, revealed that the coefficients of domestic public debt (DPD) and foreign public debt (FPD) are negative and positive, respectively, and are statistically significant. The results indicate that the long-run relative impact of public debt on economic growth (y) in Zambia is dependent on the type of public debt under consideration, that is, whether it is domestic or foreign public debt. Whereas domestic public debt negatively affects long-run economic growth, foreign public debt positively impacts economic growth in Zambia, in the long run.

The negative impact of domestic public debt on economic growth could be due to the crowding out effect of government borrowing in the domestic capital markets – further suggesting that the financial markets of Zambia are still underdeveloped and illiquid (McCulloch *et al.,* 2000a). According to Dahou *et al.* (2009), in insubstantial financial markets, a rise in domestic public debt limits access to long-term financing for private borrowers, leading to reduced capital accumulation, economic growth and welfare (Atique & Malik, 2012).

In contrast, the positive long-run impact of foreign debt on economic growth in Zambia could have started after 2006 when the country embarked on long-term foreign borrowing mainly for productive purposes (GRZ, 2015b, 2011; 2006b). Although the positive impact of foreign public debt on economic growth in Zambia is unexpected in this study, the result is in line with the finding in Schclarek (2004).

The long-run results of other variables in Model 2 show that the coefficients of investment (I) and savings (S) are positive as expected and statistically significant. The results also reveal that the coefficients of trade openness (TOP) and terms of trade (TOT) are negative and statistically significant. These findings are contrary to the expectations of the current study but are consistent with the results from previous studies such as Zahonogo (2017) and Krugman (1994). This could be the result of the economic hardship period from the mid-1970s to 2005, characterised by:

(1) severe deterioration in international commodity prices, mainly raw copper and agricultural output prices;
(2) stern global oil price shocks; and

(3) increased importation of finished consumptive output (see also World Bank, 2006).

Furthermore, the long-run regression coefficients of labour (L) and fiscal balance (FB) are statistically insignificant.

The short-run results of Model 2 for Zambia reported in Table 7.5 Panel B show that a change in either domestic public debt (ΔDPD) or foreign public debt (ΔFPD) in the current period has no significant impact on economic growth. This finding is confirmed by the coefficients of domestic public debt (ΔDPD) and foreign public debt (ΔFPD) which are both statistically insignificant.

However, the coefficient of domestic public debt in previous periods [ΔDPD(1) and ΔDPD(2)] are negative and statistically significant. This suggests that a rise in domestic public debt in the previous period in Zambia can lead to economic decline in the short run. The negative and statistically significant impact of domestic public debt in the previous periods on economic growth further suggests that public borrowing on domestic capital markets crowded out private sector investment – further signifying that the financial markets of Zambia are still underdeveloped and illiquid (see also McCulloch *et al.,* 2000a). Contrary, the short-run coefficient of foreign public debt lagged once (ΔFPD(1)) is positive and statistically significant, implying that increased foreign public debt in the past period can lead to economic growth in Zambia, in the short run.

The short-run results of other variables in Model 2 reveal further that the coefficients of investment [(ΔI) and (ΔI(2)], labour (ΔL), and savings [(ΔS) and (ΔS(1)] are positive and statistically significant. This finding suggests that changes in investment, labour and savings are positively related to economic growth, in the short run. Furthermore, economic growth in the past period (Δy(1)) positively affects economic growth in Zambia, in the short run. The short-run results for Zambia also reveal that fiscal balance (ΔFB(1)) in the preceding periods negatively affects economic growth in the short run. In addition, the impact of trade openness (ΔTOP) on economic growth in the current period is unexpectedly negative and statistically significant. Though these results are unexpected for Zambia, they are similar to those found by Zahonogo (2017) and Adhikary (2011). Finally, the lagged error correction term ECM(-1) was negative

and statistically significant at 1%, implying that in the event of a shock to the Zambian economy, economic growth adjusts to equilibrium at a rate of 48.5% per annum.

Empirical analysis of Model 2 for Zimbabwe

In Table 7.5, Panels A and B, the results for Model 2 indicate that the impact of public debt on economic growth in Zimbabwe is negative and statistically significant. This is irrespective of the type of debt – that is, whether it is domestic or foreign public debt, and the timeframe – short or long run. The results suggest that a rise in domestic or foreign public debt leads to a decrease in economic growth rate in Zimbabwe, in the short and long run.

The financing of budget imbalances in Zimbabwe during 1970-1997 was predominantly through foreign debt, while after 1998, it was a mixture of both domestic and foreign debt (World Bank, 2019, GoZ, 2018b; 2010). The bulk of domestic public debt in Zimbabwe is in treasury bills and held by the financial sector (GoZ, 2018a: 33). According to Hauner (2006), commercial bank holdings of domestic government debt associates with lower financial system efficiency and excessive crowding out, compared to when the non-banking sector holds government debt (Gulde *et al.*, 2006; Christensen, 2004). Thus, apart from deterrent interest rates, domestic debt holder composition in Zimbabwe may contribute to depressed economic performance in this country.

The negative impact of foreign public debt on economic growth in Zimbabwe may be through subdued entrepreneurship activities arising from constricted international lines of credit and public policy uncertainty (IMF, 2017b). Zimbabwe has a large proportion of foreign public debt and was expelled from concessionary borrowing by most creditors due to non-payment of its arrears (World Bank, 2019; GoZ, 2018b; IMF, 2017b; 2017c). Consequently, most foreign suppliers of industrial inputs to Zimbabwe demand to be paid in full or in advance perhaps due to the high economic and financial uncertainties in this country – such as repeated currency reforms, high exchange rate risks and perpetual political crisis. The implication is the high cost of doing business and reduced economic activity (GoZ, 2018b; 2016; 2010).

Other long-run results of Model 2 for Zimbabwe show that the coefficient of labour (L) is, as expected, positive and statistically significant. However, the coefficient of fiscal balance (FB) is negative and significant, implying that an increase in fiscal balance can lead to an economic slowdown in Zimbabwe, in the long run. The coefficients of investment (I), trade openness (TOP), savings (S) and terms of trade (TOT) were statistically insignificant.

The short-run results of other variables reveal that the coefficients of labour (ΔL(1)) are positive and statistically significant. This suggests that an increase in labour in the past period leads to increased economic growth in Zimbabwe, in the short run. Further, the short-run results show that economic growth in the preceding period (Δy(1)) positively affects economic growth in Zimbabwe, in the short run. The changes in terms of trade (ΔTOT) and fiscal balance (ΔFB) have an immediate negative impact on economic growth in Zimbabwe, in the short run. The coefficients of investment (ΔI), labour (ΔL), trade openness (ΔTOP) and savings (ΔS) are statistically insignificant. In conclusion, as expected, the error correction term ECM(-1) is negative and statistically significant at 1%, implying that in the event of a shock to the Zimbabwean economy, economic growth adjusts to equilibrium at a rate of 36.0% per annum.

Empirical analysis of Model 2 for South Africa

The long-run results of Model 2 for South Africa indicate that the overall impact of disaggregated public debt on economic growth varies with the type of debt and the timeframe considered. Although the coefficient of foreign public debt (FPD) is negative and statistically significant, the coefficient of domestic public debt (DPD) was statistically insignificant, in the long run. The results imply that a rise in foreign public debt leads to a decrease in economic growth in South Africa, in the long run. The outcome of this study is in line with the empirical evidence reported by other past empirical studies, such as Akram (2015).

Further, the coefficients of domestic public debt lagged once (ΔDPD(1)) and foreign public debt (ΔFPD) were positive and insignificant, respectively. The positive impact of domestic public debt on economic growth may reflect that the market for government securities in South Africa is well developed and diversified (SARB, 2016; National Treasury, 2016b; 2016c; 2014b). Changes in domestic public debt in South Africa may have led to the crowding in of risky private sector investment, in addition to

making the banking system more efficient, leading to improved economic performance, in the short run (National Treasury, 2016c).

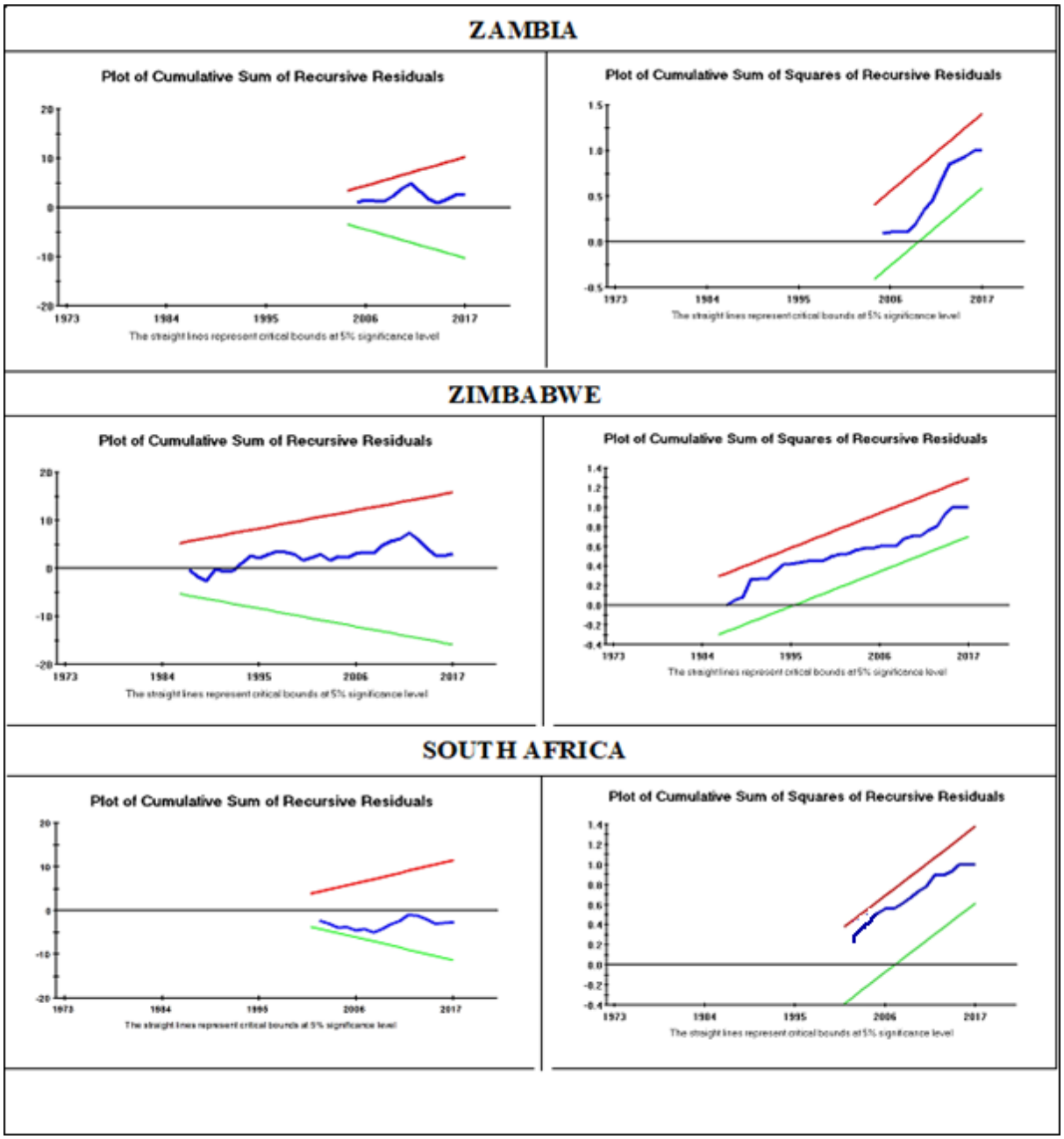
Following theoretical literature, the long-run empirical results of other variables show that investment (I), labour (L) and savings (S) have a positive and statistically significant impact on economic growth, in the long run. Other studies on the subject support this finding, such as Pattillo *et al.* (2002) and Mankiw *et al.* (1992). Although fiscal balance (FB) and trade openness (TOP) have an unexpected sign, it is not unique to this study alone. Several other studies have shown evidence of negative relationship between fiscal balance and trade openness and economic growth (see also Jawaid, 2014; Yanikkaya, 2003). The coefficient of terms of trade (TOT) was found to be statistically insignificant in South Africa.

The short-run results reveal that economic growth (Δy(1)), labour (ΔL(1)) and trade openness (ΔTOP(1)), in one past period, enhances economic performance in South Africa, in the short run. The coefficient of fiscal balance (ΔFB), is negative, implying that an increase in fiscal balance can lead to depressed economic growth in South Africa, in the short run. Changes in investment (ΔI), labour (ΔL), savings (ΔS) and terms of trade (ΔTOT) in the current period had no impact on economic growth, in the short run. The result is confirmed by the variable coefficients, which are statistically insignificant. The coefficient of the lagged error correction term ECM(-1) is negative and statistically significant at 1%, implying that in the event of a shock to the South African economy, economic growth adjusts to equilibrium at a rate of 52.2% per annum.

In summary, the main finding that emerged from the disaggregated public debt model (Model 2) is that in Zambia domestic public debt and foreign public debt negatively and positively affect economic growth, respectively. This is regardless of whether the estimations are in the short or long run. In Zimbabwe, disaggregated public debt negatively impacts economic growth, irrespective of the timeframe considered. In South Africa, whereas domestic public debt positively affects economic growth in the short run, foreign public debt crowds out economic growth in the long run.

To test the null hypothesis of model stability, the study plotted the CUSUM and Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) for Model 2, and Figure 7.2 illustrates the results.

Figure 7.2: Plot of CUSUM and CUSUMQ for Model 2



In Figure 7.2, the CUSUM and CUSUMQ plots from the recursive estimation of the model reveal evidence of stability in the relationship between disaggregated public debt and economic growth in the study countries. That is, the CUSUM and CUSUMQ plots of Model 2 are within the confidence band at 5% significance level across the study countries. This signifies that the study cannot reject the null hypothesis of model stability. The result implies that there is no systematic change in the reported long-run coefficients of the explanatory variables at the 5% level of significance.

7.3.3 Econometric analysis for Model 3: Impact of public debt service on economic growth

7.3.3.1 Cointegration test for Model 3

Cointegration results for Model 3 are presented in Table 7.6. The reported bounds F-statistics for Model 3 are 4.318, 3.284 and 4.423 for Zambia, Zimbabwe and South Africa, respectively. The calculated F-statistics results in the three study countries are above the Pesaran *et al.*'s (2001) upper bound critical values at 1%, 10% and 1% significance levels, respectively. The results confirm the presence of cointegration between economic growth conditioned on public debt service, investment, labour, fiscal balance, trade openness, savings and terms of trade in the three study countries.

Table 7.6: Bounds F-statistic results for cointegration of Model 3 (all the study countries)

Country	Dependent Variable	Function	F-statistic	Cointegration status
Zambia	y	F(y|PDS,I,L,FB,TOP,S,TOT)	4.318***	Cointegrated
Zimbabwe	y	F(y|PDS,I,L,FB,TOP,S,TOT)	3.284*	Cointegrated
South Africa	y	F(y|PDS,I,L,FB,TOP,S,TOT)	4.423***	Cointegrated

Asymptotic critical values (unrestricted intercept and no trend)						
Pesaran *et al.* (2001: 300) critical values [Table CI(iii) Case III]	10%		5%		1%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.03	3.13	2.32	3.50	2.96	4.26

*Note: *, ** and *** denote significance at 10%, 5% and 1%, respectively.*

Following confirmation of cointegration in the economic growth Model 3 in Zambia, Zimbabwe and South Africa, the next step is to estimate the short- and long-run coefficients.

7.3.3.2 Coefficient estimation for Model 3

Similar to Models 1 and 2, the optimal lag length for the ARDL models for Zambia, Zimbabwe and South Africa were selected based on either the AIC or BIC techniques. Guided by the model's suitability, the study selected for Model 3: AIC-based ARDL (2,

2, 3, 1, 2, 3, 3, 2) for Zambia; BIC-based ARDL (3, 3, 0, 0, 2, 1, 2, 0) for Zimbabwe; and AIC-based ARDL (2, 0, 1, 1, 0, 1, 0, 0) for South Africa. Table 7.7 presents the empirical long- and short-run regression coefficients of the selected ARDL models.

Table 7.7: Estimation of long-run and short-run coefficients for Model 3 (all the study countries)

Panel A: Long-run coefficients (Dependent variable is y)						
	Zambia		Zimbabwe		South Africa	
Regressors	Coefficient	T-ratio[p-value]	Coefficient	T-ratio[p-value]	Coefficient	T-ratio[p-value]
C	-11.459	-0.960 [0.251]	60.655*	1.919 [0.065]	24.185	1.059 [0.297]
PDS	-0.200	-1.615 [0.119]	0.694**	2.713 [0.011]	0.165	0.781 [0.441]
I	0.255*	2.087 [0.051]	0.476**	2.092 [0.046]	0.349**	2.707 [0.011]
L	0.090*	1.793 [0.085]	-0.682*	-1.830 [0.078]	-0.234	-0.552 [0.585]
FB	0.018	0.122 [0.904]	-0.750**	-2.174 [0.038]	0.294**	2.123 [0.041]
TOP	-0.475***	-3.295 [0.004]	-0.149	-1.498 [0.145]	0.145**	2.312 [0.027]
S	0.556**	2.370 [0.024]	-0.141**	-2.643 [0.013]	0.320**	2.656 [0.012]
TOT	-0.348	-0.631 [0.536]	0.198	0.611 [0.546]	-0.186*	-1.963 [0.058]

Panel B: Short-run coefficients (Dependent variable is Δy)						
	Zambia		Zimbabwe		South Africa	
Regressors	Coefficient	T-ratio[p-value]	Coefficient	T-ratio[p-value]	Coefficient	T-ratio[p-value]
Δy(1)	0.171	1.594 [0.122]	0.071*	1.928 [0.164]	0.034**	2.650 [0.014]
Δy(2)	-	-	-0.238	-1.449 [0.069]	-	-
ΔPDS	-0.098*	-1.733 [0.094]	-0.095*	-1.779 [0.085]	0.170	0.792 [0.433]
ΔPDS(1)	-0.087	-0.713 [0.482]	-0.060***	-2.923 [0.006]	-	-
ΔPDS(2)	-	-	-0.656	-1.073 [0.291]	-	-
ΔI	-0.137	-0.965 [0.344]	0.439*	1.936 [0.062]	0.372	1.600 [0.118]
ΔI(1)	-0.300	-1.590 [0.124]	-	-	-	-
ΔI(2)	0.113*	1.962 [0.062]	-	-	-	-
ΔL	0.088	1.661 [0.109]	-0.629*	-1.722 [0.095]	-0.136	-0.278 [0.783]
ΔFB	0.105	1.011 [0.322]	-0.146**	-2.451 [0.021]	0.304**	2.038 [0.049]
ΔFB(1)	-0.261**	-2.780 [0.010]	-0.572*	-1.985 [0.056]	-	-
ΔTOP	-0.161	-1.236 [0.228]	-0.357**	-2.595 [0.014]	0.018	0.292 [0.772]
ΔTOP(1)	0.277**	2.700 [0.012]	-	-	-	-
ΔTOP(2)	0.236**	2.560 [0.017]	-	-	-	-
ΔS	-0.021	-0.117 [0.908]	0.023	0.106 [0.916]	0.330***	2.767 [0.009]
ΔS(1)	-0.392*	-1.791 [0.085]	0.479*	1.992 [0.055]	-	-

ΔS(2)	-0.042	-0.234 [0.817]	-	-	-	-
ΔTOT	0.707	1.649 [0.112]	0.183	0.600 [0.552]	-0.193*	-2.022 [0.051]
ΔTOT(1)	0.065	0.104 [0.918]	-	-	-	-
ECM(-1)	-0.249***	-4.807 [0.000]	-0.622***	-5.657 [0.000]	-0.344***	-6.960 [0.000]

	Zambia	**Zimbabwe**	**South Africa**
R-squared	0.822	0.749	0.708
R-bar-squared	0.584	0.548	0.577
F-statistic	4.460 [0.000]	3.835 [0.001]	4.652 [0.000]
DW statistic	1.907	2.149	2.016
SE of Regression	2.686	5.227	1.616
Residual Sum of Squares	129.844	64.972	86.120
Akaike Info. Criterion	-109.775	-44.596	-90.457
Schwartz Bayesian Criterion	-118.790	-59.958	-101.297

*Note: *, ** and *** signify statistical significance at 10%, 5% and 1% levels, respectively.*

Empirical analysis of Model 3 for Zambia

The long-run results of Model 3 for Zambia presented in Table 7.7 Panel A reveals that the coefficient of public debt service (PDS) is statistically insignificant. This infers that public debt service has a neutral impact on the economic growth (y) process of Zambia, in the long run. The results fail to confirm the presence of crowding out effect between public debt service and economic growth in Zambia, in the long run. There are three possible explanations for this result. First, the financial outlays towards public debt payments may have been too small (due to inability to repay the loans) to create the long-run crowding effect on economic growth in Zambia (IMF, 2017a).

Second, the debt relief initiatives implicitly reduced the public debt service costs in that debt payments could not influence economic growth initiatives in this country. Finally, there are possibilities that the borrowed funds were put into productive investments, thereby enhancing the country's capacity to repay the loans without depressing economic growth. The argument is, however, that despite the insignificant impact of public debt service on economic growth in Zambia, the government debt service costs adversely affected social expenditures, such as health, education and other welfare programmes (MOF, 2014b). The evidence is the extension of debt relief initiatives by the creditor community from 1990 to 2006 to this country in a move to alleviate poverty (World Bank, 2018c; 2007; IMF & IDA, 2000). This study finding is in line with other previous studies on the subject (Akram, 2016; 2015; Jalles, 2011).

The long-run results of other variables in Model 3 reported in Table 7.7 Panel A indicate that the coefficients of investment (I), labour (L) and savings (S) are positive and statistically significant. Although the coefficient of trade openness (TOP) is unexpectedly negative and statistically significant, the result is not unique to this study alone. Studies by Zahonogo (2017) and Adhikary (2011), among others, indicate a negative relationship between trade openness and economic growth. In addition, the study results reveal that fiscal balance (FB) and terms of trade (TOT) have no long-run impact on economic growth in Zambia.

The short-run results presented in Table 7.7 Panel B show that the coefficient of public debt service (ΔPDS) is negative and statistically significant. This implies that an increase in public debt service in Zambia in the current period can lead to an

economic decline in the short run. This outcome compares favourably with the findings of Hansen (2001) on the same subject.

Further, the short-run results displayed in Table 7.7 Panel B reveal that the coefficients of investment in two prior periods (∆I(2)) and trade openness [∆TOP(1) and ∆TOP(2)] are positive and statistically significant. These results suggest that investment and trade openness in the past period have a positive impact on economic growth in the short run. Furthermore, the short-run coefficients of fiscal balance (∆FB(1)) and savings (∆S(1)) lagged one period is negative and statistically significant. This result could imply that both fiscal balance and gross domestic savings lagged one period are negatively correlated with economic growth in Zambia. The unexpected negative sign of fiscal balance suggests that expansionary fiscal operations in Zambia may be growth-inhibiting (see also Bigsten & Mugerwa, 2000; World Bank, 1993). Lastly, the error correction term ECM(-1) is negative as expected and statistically significant at 1%, implying that in the event of a shock to the Zambian economy, economic growth adjusts to equilibrium at a rate of 24.9% per annum.

Empirical analysis of Model 3 for Zimbabwe

The long-run empirical results for Model 3 for Zimbabwe presented in Table 7.7 Panel A show that the coefficient of public debt service (PDS) is positive and statistically significant. This suggests that a rise in public debt service leads to an increase in economic growth (y) in Zimbabwe, in the long run. This finding is unexpected in this study and contradicts the theoretical and empirical underpinnings on this subject – particularly the debt overhang hypothesis (Sachs, 1989; Myers 1977). Though contrary to expectation, this could be a result of the country's failure to honour its international financial obligations as highlighted in Mupunga and Le Roux (2014), Gono (2008) and IMF (2001).

The other long-run results for variables in Model 3 show that the coefficient of investment (I) is positive and statistically significant, implying that investment and economic growth are positively related, in the long run. Further, the coefficients of labour (L), fiscal balance (FB) and savings (S) are unexpectedly negative and statistically significant, implying that the variables negatively impact economic growth in Zimbabwe, in the long run. Gross domestic savings in Zimbabwe have not only been declining since 2000 but were also negative (World Bank, 2019). There are,

therefore, possibilities that private sector savings were absorbed by the exponential rise in domestic public debt since 2000 and were being used in consumptive activities by the government, resulting in depressed economic growth rates (GoZ, 2018b; World Bank, 2019). A mixture of high inflation rates and a series of currency reforms since 2000 have augmented the decline in gross domestic savings in Zimbabwe, and hence net investments (RBZ, 2016c, GoZ, 2018b, 2014). In addition, the coefficients of trade openness (TOP) and terms of trade (TOT) were statistically insignificant.

The short-run results in Table 7.7 Panel B for Zimbabwe show that the coefficients of public debt service [ΔPDS and ΔPDS(1)] are negative and statistically significant. This implies that an increase in public debt service in Zimbabwe, both in the current period and in one past period, leads to a reduction in economic growth rate (y), in the short run.

The short-run results for other variables in Model 3 indicate that economic growth in the past period (Δy(1)) positively affects economic growth in Zimbabwe. The coefficient of investment (ΔI) is positive and statistically significant, implying that an increase in investment leads to increased economic growth in Zimbabwe, in the short run. Whereas the coefficient of savings (ΔS) were insignificant in the current period, savings in one past period (ΔS(1)) have a positive impact on economic growth in Zimbabwe, in the short run.

The other short-run results reveal that the coefficients of labour (ΔL), fiscal balance [ΔFB, ΔFB(1)] and trade openness (ΔTOP) are negative and statistically significant. The negative impact of trade openness on economic growth may be related to the huge imports of finished consumptive products and limited exports (World Bank, 2018a). The coefficient of terms of trade (ΔTOT) is statistically insignificant. In conclusion, the lagged error correction term ECM(-1) is, as expected, found to be negative and statistically significant at 1%, implying that in the event of a shock to the Zimbabwean economy, economic growth adjusts to equilibrium at a rate of 62.2% per annum.

Empirical analysis of Model 3 for South Africa

In South Africa, the impact of public debt service on economic growth (Model 3) supports the neutrality hypothesis – Ricardian Equivalence Hypothesis. The results

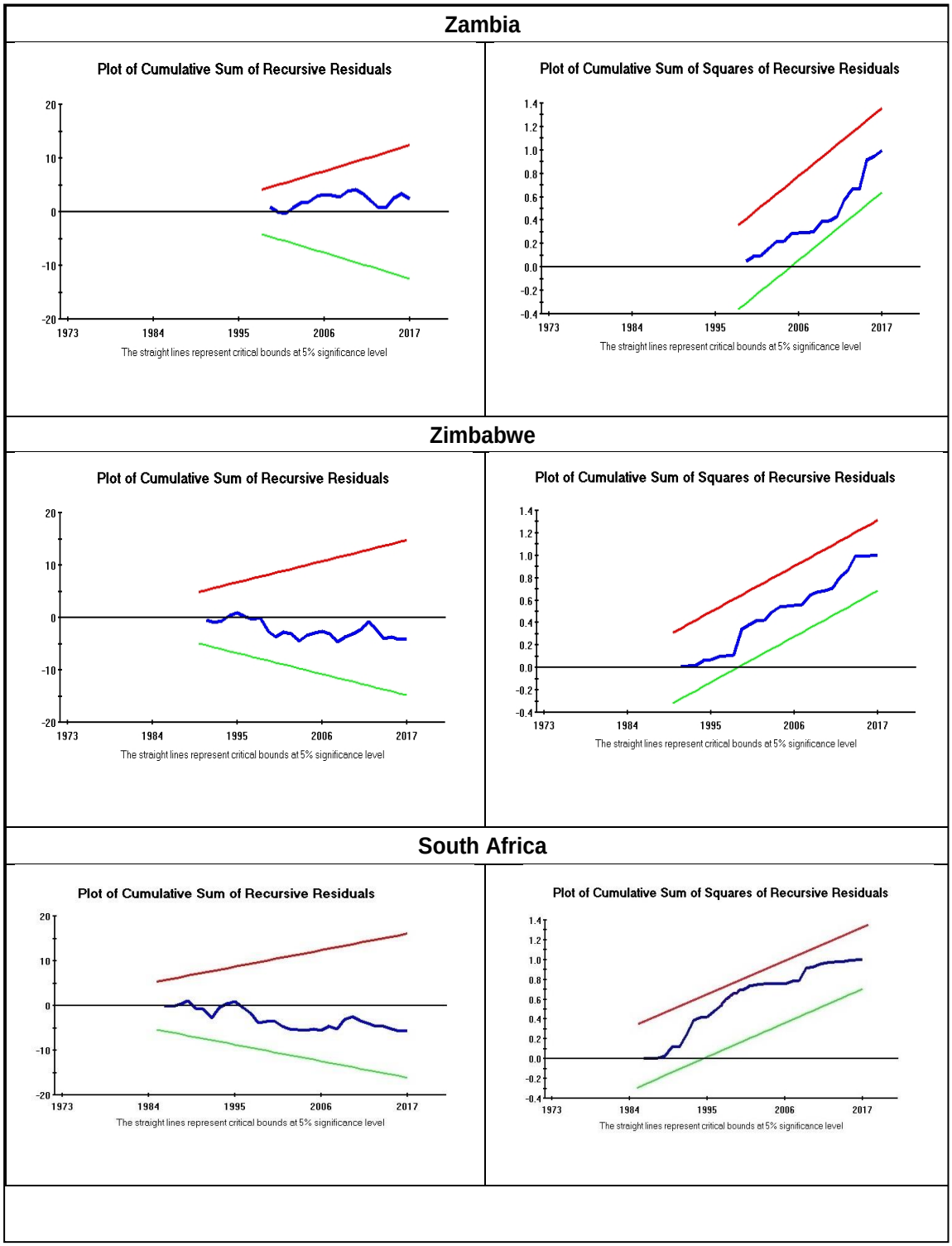
apply irrespective of whether the estimated impact is in the short- or long run, as confirmed by the coefficients of PDS in Table 7.7 Panels A and B, which are statistically insignificant. This implies that public debt service has no statistically significant crowding effect on economic growth in South Africa, both in the short and long run. These study findings, though contrary to expectations, are in line with the existing empirical literature on the subject (Akram, 2016; 2015; Jalles, 2011).

Consistent with study expectations, investment (I), fiscal balance (FB), trade openness (TOP) and savings (S) are growth-enhancing, in the long run. Although the short-run outcome was consistent for the two former variables (ΔFB and ΔS); it was inconsistent for the two latter variables (ΔTOP and ΔI) that had no significant impact on economic growth in the short run. Further, contrary to expectations, terms of trade (TOT) is negative and statistically significant in the long- and short run. This outcome suggests that although South Africa is one of the top emerging market economies in Africa, the economy is not immune to global economic and financial crises that directly affect the volume and value of exports (see also UNCTAD, 2017). The coefficient of economic growth (Δy(1)) is positive and statistically significant, implying that economic growth lagged one period can positively influence current economic growth in South Africa, in the short run. The results in Table 7.7 Panels A and B further show that labour has no significant impact on economic growth in South Africa, in the short and long run. Finally, the coefficient of the lagged error correction term ECM(-1) is negative and statistically significant at 1%, implying that the disequilibrium occurring due to a shock is corrected at a rate of 34.4% per annum.

Based on the results reported in Table 7.7 Panels A and B, the impact of public debt service on economic growth in Zambia varies depending on the timeframe considered. The effect was negative in the short run and insignificant in the long run. In Zimbabwe, the impact of public debt service on economic growth is distinctly different depending also on the timeframe considered. The impact was positive in the long run and negative in the short run and statistically significant. In South Africa, the coefficient of public debt service is statistically insignificant in the long and short run.

The study checked for the stability of Model 3 in the three study countries by plotting the CUSUM and CUSUMQ, and Figure 7.3 displays the results.

Figure 7.3: Plot of CUSUM and CUSUMQ for Model 3



In Figure 7.3, the CUSUM and CUSUMQ plots for Model 3 provides no indication of instability in the relationship between public debt service and economic growth in the study countries. That is, the plots of both the CUSUM and CUSUMQ in Figure 7.3 are within the confidence band at 5% significance level for all the study countries. This

implies that Model 3 is stable and there is no systematic change in the reported long-run coefficients of the explanatory variables at the 5% level of significance.

7.3.4 Summary of the dynamic impact models – Models 1, 2 and 3

In this section, the results of the impact analysis in all the study countries are reported in Table 7.8.

Table 7.8: Summary of impact analysis models - Models 1, 2 and 3 (all three study countries)

				Study country		
			Period	Zambia	Zimbabwe	South Africa
Model 1	Impact of PD on y	Positive impact	Short run	✓		
			Long run	✓		
		Negative impact	Short run		✓	✓
			Long run		✓	✓
		No impact	Short run			
			Long run			
Model 2	Relative impact of DPD on y	Positive impact	Short run			✓
			Long run			
		Negative impact	Short run	✓	✓	
			Long run	✓	✓	
		No impact	Short run			
			Long run			✓
	Relative impact of FPD on y	Positive impact	Short run	✓		
			Long run	✓		
		Negative impact	Short run		✓	
			Long run		✓	✓
		No impact	Short run			✓
			Long run			
Model 3	Impact of PDS on y	Positive impact	Short run			
			Long run		✓	
		Negative impact	Short run	✓	✓	
			Long run			
		No impact	Short run			✓
			Long run	✓		✓

Notes: PD = public debt; y = economic growth; PDS = public debt service; DPD = domestic public debt; FPD = foreign public debt; and √ indicates presence of a corresponding impact.

The results for Model 1 reported in Table 7.8 for Zambia reveal that aggregate public debt has a positive impact on economic growth, irrespective of whether the analysis was in the short or long run. The results for Model 1 further reveal that aggregate public debt negatively impacts economic growth in Zimbabwe and South Africa,

regardless of whether the regression analysis was in the short or long run. Therefore, based on the study findings, it can be stated that the overall impact of aggregate public debt on economic growth varies across the countries, depending on country-specific factors.

The empirical findings of Model 2 in Table 7.8 indicate that for Zambia and Zimbabwe the impact of domestic public debt on economic growth is negative, irrespective of whether the analysis was in the short or long run. However, the effect of foreign public debt in Zambia and Zimbabwe was positive and negative, respectively, irrespective of the timeframe considered. In the case of South Africa, the results of Model 2 reveal in contrast that domestic public debt has a positive impact on economic growth in the short run only, foreign public debt is also negatively related to economic growth in the long run only.

The empirical results for Model 3 summarised in Table 7.8 reveal that public debt service in Zambia negatively affects economic growth in the short run only. In Zimbabwe, the impact of public debt service on economic growth is negative in the short run and positive in the long run. Lastly, in South Africa, the findings of Model 3 show that public debt service and economic growth are not related whatsoever.

Based on the impact analysis results, the nature of the relationship between aggregate public debt and economic growth, the relative impact of domestic and foreign public debt on economic growth and the nature of the relationship between public debt service and economic growth differs from country to country. The study expected aggregate public debt, domestic public debt, foreign public debt and public debt service to negatively impact economic growth in the study countries.

Thus, from the study analysis, it can be concluded that the impact of aggregate public debt, disaggregated public debt (domestic and foreign) and public debt service on economic performance varies from country to country. The study further establishes that economies are unique and country-specific research is indispensable in determining the impact of public debt, aggregated and disaggregated, and public debt service on economic growth. Hence, the notion that public debt or public debt service is bad for economic growth is merely based on prima facie or superficial evidence and may be debatable.

7.4 ECM-based Granger-causality analysis for Model 4 (all study countries)

7.4.1 Cointegration test for Model 4

To establish the direction of causality between variables, the study undertook the bounds F-statistic test for cointegration to validate the existence or nonexistence of a cointegration relationship among variables in the models. The results of the bounds F-statistic test for a system of the cointegration equations associated with the Granger-causality Models 4a and 4b for the study countries are presented in Table 7.9.

Table 7.9: Bounds F-statistic results for cointegration of Model 4 (all the study countries)

ZAMBIA							
Model 4a: Public debt (PD), fiscal balance (FB), savings (S) and economic growth (y)				***Model 4b: Public debt service (PDS), fiscal balance (FB), savings (S) and economic growth (y)***			
Dependent variable	**Function**	**F-statistic**	**Cointegration status**	**Dependent variable**	**Function**	**F-statistic**	**Cointegration status**
y	F(y| PD, FB, S)	4.632**	Cointegrated	**y**	F(y| PDS, FB, S)	6.165***	Cointegrated
PD	F(PD| y, FB, S)	3.865*	Cointegrated	**PDS**	F(PDS| y, FB, S)	1.761	Not cointegrated
FB	F(FB| y, PD, S)	2.926	Not cointegrated	**FB**	F(FB| y, PDS, S)	3.101	Not cointegrated
S	F(S| y, PD, FB)	2.781	Not cointegrated	**S**	F(S| y, PDS, FB)	2.437	Not cointegrated
ZIMBABWE							
Dependent variable	**Function**	**F-statistic**	**Cointegration status**	**Dependent variable**	**Function**	**F-statistic**	**Cointegration status**
y	F(y| PD, FB, S)	3.927*	Cointegrated	**y**	F(y| PDS, FB, S)	4.903**	Cointegrated
PD	F(PD| y, FB, S)	1.511	Not cointegrated	**PDS**	F(PDS| y, FB, S)	1.086	Not cointegrated
FB	F(FB| y, PD, S)	2.231	Not cointegrated	**FB**	F(FB| y, PDS, S)	2.266	Not cointegrated
S	F(S| y, PD, FB)	1.037	Not cointegrated	**S**	F(S| y, PDS, FB)	0.867	Not cointegrated

SOUTH AFRICA							
Dependent variable	**Function**	**F-statistic**	**Cointegration status**	**Dependent variable**	**Function**	**F-statistic**	**Cointegration status**
y	F(y| PD, FB, S)	4.538**	Cointegrated	**y**	F(y| PDS, FB, S)	6.200***	Cointegrated
PD	F(PD| y, FB, S)	2.407	Not cointegrated	**PDS**	F(PDS| y, FB, S)	3.850*	Cointegrated
FB	F(FB| y, PD, S)	1.537	Not cointegrated	**FB**	F(FB| y, PDS, S)	2.335	Not cointegrated
S	F(S| y, PD, FB)	3.784	Cointegrated	**S**	F(S| y, PDS, FB)	3.112	Not cointegrated

Asymptotic critical values (unrestricted intercept and no trend)						
Pesaran *et al.* (2001: 300) critical values [Table CI(iii) Case III]	**10%**		**5%**		**1%**	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
	2.72	3.77	3.23	4.35	4.29	5.61

*Note: *, ** and *** signify statistical significance at 10%, 5% and 1% levels, respectively.*

The results of the cointegration tests in Table 7.9 (Model 4a) suggest that cointegration between public debt, fiscal balance, savings and economic growth vary according to the dependent variable. The results of Model 4a for Zambia show the presence of two cointegrating vectors; that is, there is cointegration when economic growth and public debt are the dependent variables. However, there is only cointegration when economic growth (y) is the dependent variable in Model 4b, in Zambia. In the case of Zimbabwe, there is only cointegration when economic growth (y) is the dependent variable in Models 4a and 4b. Finally, the results reported in Table 7.9 (Model 4a) show that cointegration exists in the economic growth and savings functions, and when economic growth and public debt service are the dependent variables in Model 4b. The corresponding F-statistics have confirmed the cointegration relationships reported in Table 7.9 in the respective functions, which are statistically significant.

7.4.2 ECM-based Granger-causality results

Table 7.9 confirms cointegration in some functions, and the next step is to examine the direction of causality between the variables. The F-statistics on the explanatory variables determines the short-run causality, based on the Variable Deletion Test. However, to determine the speed of adjustment towards the long-run equilibrium, the lagged error correction term is incorporated in those equations that cointegration is confirmed. The long-run causality is established by both the significance and negative sign of the coefficient of the error correction term. If the sign of the coefficient of the error correction term is positive and significant, or negative but insignificant, then there is no long-run causality from the explanatory variables, meaning that the independent variables do not influence the dependent variable (Narayan & Smyth, 2009). The results of the Granger-causality test for Model 4a and Model 4b are in Table 7.10.

Table 7.10: Granger-causality results for Model 4 (all study countries)

ZAMBIA											
Model 4a: Public debt (PD), fiscal balance (FB), savings (S) and economic growth (y)						***Model 4b: Public debt service (PDS), fiscal balance (FB), savings (S) and economic growth (y)***					
Dependent Variable	F-statistics [probability]				ECM_{t-1} [t-statistics]	Dependent Variable	F-statistics [probability]				ECM_{t-1} [t-statistics]
	Δy_t	ΔPD_t	ΔFB_t	ΔS_t			Δy_t	ΔPDS_t	ΔFB_t	ΔS_t	
Δy_t	-	0.896 [0.417]	5.551*** [0.008]	2.712* [0.080]	-0.736*** (-4.769)	Δy_t	-	1.263 [0.267]	8.337*** [0.006]	0.116 [0.736]	-0.218*** (-4.905)
ΔPD_t	5.009** [0.031]	-	5.547** [0.021]	0.125 [0.726]	-0.414*** (-3.776)	ΔPDS_t	2.262 [0.140]	-	0.882 [0.353]	0.943 [0.337]	-
ΔFB_t	0.811 [0.373]	0.202 [0.655]	-	2.123 [0.153]	-	ΔFB_t	0.726 [0.399]	0.943 [0.487]	-	1.667 [0.204]	-
ΔS_t	1.995 [0.165]	0.226 [0.637]	3.310* [0.076]	-	-	ΔS_t	1.847 [0.182]	0.889 [0.351]	3.011* [0.090]	-	-
ZIMBABWE											
Model 4a: Public debt (PD), fiscal balance (FB), savings (S) and economic growth (y)						***Model 4b: Public debt service (PDS), fiscal balance (FB), savings (S) and economic growth (y)***					
Dependent Variable	F-statistics [probability]				ECM_{t-1} [t-statistics]	Dependent Variable	F-statistics [probability]				ECM_{t-1} [t-statistics]
	Δy_t	ΔPD_t	ΔFB_t	ΔS_t			Δy_t	ΔPDS_t	ΔFB_t	ΔS_t	
Δy_t	-	0.088 [0.916]	0.353 [0.705]	3.939* [0.061]	-0.699*** (-5.954)	Δy_t	-	1.343 [0.274]	0.030 [0.970]	2.286* [0.053]	-0.572*** (-4.269)
ΔPD_t	2.169* [0.083]	-	2.210* [0.083]	0.867 [0.429]	-	ΔPDS_t	0.392 [0.535]	-	0.258 [0.774]	0.482 [0.622]	-
ΔFB_t	1.932 [0.173]	0.014 [0.986]	-	2.667* [0.083]	-	ΔFB_t	1.320 [0.258]	3.306** [0.048]	-	4.8754** [0.013]	-
ΔS_t	0.342 [0.562]	1.277 [0.291]	0.672 [0.517]	-	-	ΔS_t	0.115 [0.736]	2.756* [0.077]	0.029 [0.971]	-	-

SOUTH AFRICA											
Model 4a: Public debt (PD), fiscal balance (FB), savings (S) and economic growth (y)						***Model 4b: Public debt service (PDS), fiscal balance (FB), savings (S) and economic growth (y)***					
Dependent Variable	F-statistics [probability]				ECM_{t-1} [t-statistics]	Dependent Variable	F-statistics [probability]				ECM_{t-1} [t-statistics]
	Δy_t	ΔPD_t	ΔFB_t	ΔS_t			Δy_t	ΔPDS_t	ΔFB_t	ΔS_t	
Δy_t	-	1.739 [0.179]	2.468* [0.080]	3.143* [0.054]	-0.376*** (-4.520)	Δy_t	-	1.002 [0.323]	5.254** [0.027]	3.753* [0.060]	-0.369*** (-4.574)
ΔPD_t	2.316* [0.051]	-	0.465 [0.632]	1.333 [0.256]	-	ΔPDS_t	0.274 [0.604]	-	1.577 [0.217]	8.030*** [0.003]	-0.244** (-2.628)
ΔFB_t	0.879 [0.462]	1.905 [0.148]	-	0.845 [0.479]	-	ΔFB_t	1.119 [0.296]	0.004 [0.948]	-	1.579 [0.216]	-
ΔS_t	2.108 [0.118]	2.802* [0.055]	1.339 [0.279]	-	-0.134* (-1.727)	ΔS_t	2.993* [0.091]	0.671 [0.418]	0.746 [0.393]	-	-

*Note: *, ** and *** denote statistical significance at 10%, 5% and 1% levels, respectively. The square brackets refer to the probability value of the F-statistic, while round brackets refer to the t-statistic of the lagged ECM term.*

Empirical analysis of Model 4 for Zambia

The empirical results presented in Table 7.10 for Model 4a indicate that there is a unidirectional Granger-causality from economic growth (y) to public debt (PD) in Zambia, irrespective of the timeframe considered. The short-run causality is confirmed by the corresponding F-statistic of economic growth (Δy_t) in the public debt (ΔPD_t) function. In contrast, the long-run causality is established by the error correction term (ECM_{t-1}), in the same function, which is both negative and statistically significant at 1% level of significance. These findings support the hypothesis that the velocity of economic growth matters most in determining the level of public sector indebtedness. Furthermore, the results, although not expected, compare favourably with other past studies (Donayre & Taivan, 2017).

Other results reported in Model 4a for Zambia indicate that there is:

(1) distinct unidirectional Granger-causal flow from fiscal balance to economic growth, both in the short and long run;
(2) short- and long-run unidirectional causality from savings to economic growth;
(3) short- and long-run unidirectional Granger-causal flow from fiscal balance to public debt;
(4) short-run unidirectional causality flow from fiscal balance to savings; and
(5) no causality between savings and public debt.

Furthermore, the empirical results reported in Table 7.10 for Model 4b indicate that there is no short- and long-run causality between public debt service (PDS) and economic growth in Zambia. Although unexpected, this finding is not unique, as similar evidence was reported in some earlier studies (Jalles, 2011). Further results for Model 4b reveal that there is (1) a distinct short- and long-run unidirectional Granger-causality from fiscal balance to economic growth; (2) short-run unidirectional Granger-causal flow from fiscal balance to savings, and no long-run causality between the two variables; and (3) no causality between economic growth and savings, public debt service and fiscal balance, and public debt service and savings.

Empirical analysis of Model 4 for Zimbabwe

The results in Table 7.10 (Model 4a) reveal that in Zimbabwe, there is short-run unidirectional Granger-causality from economic growth (y) to public debt (PD). This result is confirmed by the corresponding F-statistic of economic growth (Δy_t) in the public debt (ΔPD_t) function, which is statistically significant. This established causal flow in Zimbabwe is consistent with the view that low economic growth rates compel the country to borrow excessively to finance the savings, fiscal and current account gaps. The country has an average economic growth rate of -0.1% for the period 1970 to 2017 (World Bank, 2018a). During the period 2000-2008, the country recorded persistently negative economic growth rates, averaging -8.3% (World Bank, 2018a). The country's poor economic performance since 2014 and associated negative economic growth rates might have worsened the debt position of the government (GoZ, 2018b). This finding is not limited to this study; it agrees with some past studies on the subject (Donayre & Taivan, 2017; Gómez-Puig & Sosvilla-Rivero, 2015).

Other empirical results of Model 4a for Zimbabwe reveal that there are:

(1) short- and long-run unidirectional causal flow from savings to economic growth;
(2) short-run unidirectional causal flow from fiscal balance to public debt;
(3) short-run unidirectional causal flow from savings to fiscal balance; and
(4) no causality between fiscal balance and economic growth, and between savings and public debt.

The empirical results in Table 7.10 (Model 4b) for public debt service, fiscal balance, savings and economic growth in Zimbabwe, indicate no causal link between public debt service and economic growth, irrespective of whether the causality is estimated in the short or long run. This finding is confirmed by the F-statistic of ΔPDS_t, in the economic growth (Δy_t) function, and Δy_t in the public debt service (ΔPDS_t) function, which are both statistically insignificant. Though unexpected in this study, the finding is in line with the empirical evidence reported by Singh (1999).

Other results of Zimbabwe reported in Table 7.10 (Model 4b) reveal a:

(1) short- and long-run unidirectional causal flow from savings to economic growth;
(2) short-run unidirectional causality from public debt service to fiscal balance;

(3) short-run unidirectional causality from savings to fiscal balance;
(4) short-run unidirectional causality from public debt service to savings; and
(5) no causality between fiscal balance and economic growth.

Empirical analysis of Model 4 for South Africa

The empirical results reported in Table 7.10 (Model 4a) for South Africa indicate that there is short-run unidirectional causal flow from economic growth (y) to public debt (PD). This result is confirmed by the corresponding F-statistic of economic growth (Δy_t) in the public debt (ΔPD_t) function, which is statistically significant. These results are not unique to this study as they are consistent with the finding in Donayre and Taivan (2017). According to Donayre and Taivan (2017), low levels of economic growth lead to a rise in the public debt-to-GDP ratio.

Other results of Model 4a for South Africa reveal that there is:

(1) unidirectional causal flow from fiscal balance to economic growth, irrespective of whether the causality is estimated in the short or long run;
(2) short- and long-run Granger-causality from savings to economic growth;
(3) short- and long-run causal flow from public debt to savings; and
(4) no causality between fiscal balance and public debt, and fiscal balance and savings.

Finally, the empirical results in Table 7.10 (Model 4b) for public debt service, fiscal balance, savings and economic growth show that in South Africa, there is no short- or long-run Granger-causality between public debt service and economic growth. This is irrespective of whether the causality is estimated in the short or long run. This is confirmed by F-statistics of ΔPDS in the economic growth function (Δy_t) and that of Δy_t in the public debt service function (ΔPDS_t), which are both statistically insignificant. Although unexpected, this finding is not isolated to this study; it is similar to the evidence reported by Jalles (2011).

Other results reported in Model 4b, for South Africa, reveal that there is:

(1) short- and long-run unidirectional causality from fiscal balance to economic growth;

(2) short-run bidirectional causality from savings to economic growth;
(3) long-run unidirectional causality from savings to economic growth;
(4) distinct short- and long-run unidirectional causality from savings to public debt service; and
(5) no causality between savings and fiscal balance, and public debt service and fiscal balance.

7.4.3 Summary of the ECM-based causality results – Models 4a and 4b

From the causality front, Table 7.11 summarises the results of the Granger-causality tests (Models 4a and 4b).

Table 7.11: Summary of Granger-causality results for Models 4a and 4b (all three study countries)

	Model 4a – PD, y, FB, S		**Model 4b – PDS, y, FB, S**	
Study country	**Direction of Causality**		**Direction of Causality**	
	Short Run	**Long Run**	**Short Run**	**Long Run**
Zambia	y ⟼ PD	y ⟼ PD	No causality	No causality
Zimbabwe	y ⟼ PD	No causality	No causality	No causality
South Africa	y ⟼ PD	No causality	No causality	No causality

Notes: PD = public debt; y = economic growth; FB = fiscal balance; S = savings; PDS = public debt service; and ⟼ indicates direction of causality.

As summarised in Table 7.11, Model 4a illustrates that economic growth Granger-causes public debt in all the study countries in the short run. In the long run, however, the causal relationship was sensitive to the country under investigation. In Zambia, causality flowed from public debt to economic growth, while in Zimbabwe and South Africa, there was no causality in the long run. The results of Model 4b are consistent with the Ricardian Equivalence hypothesis in which the findings fail to find evidence in support of any causal link between public debt service and economic growth in the study countries, irrespective of whether the analysis is in the long or short run.

7.4 Conclusion

In this chapter, the econometric analysis and the empirical findings from Zambia, Zimbabwe and South Africa were presented and discussed using four models based on:

(1) the impact of aggregate public debt on economic growth (Model 1);
(2) the relative impact of disaggregated public debt (domestic and foreign) on economic growth (Model 2);
(3) the impact of public debt service on economic growth (Model 3); and
(4) the causal linkages between aggregate public debt and economic growth (Model 4a), and public debt service and economic growth (Model 4b), from 1970 to 2017.

The study employed an ARDL approach. For the impact models, Models 1, 2 and 3, the findings varied from country to country. Model 4 tested the Granger-causality between aggregate public debt and economic growth (Model 4a), and public debt service and economic growth (Model 4b) within a multivariate setting. Two control variables, that is, fiscal balance and gross domestic savings, were added as intermittent variables in the two models to minimise the problem of omission-of-variable bias. Therefore, Model 4a consisted of aggregate public debt, economic growth, fiscal balance and savings, while Model 4b comprised of public debt service, economic growth, fiscal balance and savings.

Based on Model 1's results, aggregate public debt was found to have a positive impact on economic growth in Zambia, irrespective of whether the analysis was in the short or long run. In Zimbabwe and South Africa, aggregate public debt and economic growth were negatively related, both in the short- and long run. Thus, based on Model 1 results, aggregate public debt is growth-enhancing in Zambia and is growth-inhibiting in Zimbabwe and South Africa, and this outcome applies both in the short and long run.

The empirical findings for Model 2 revealed that the impact of the disaggregated public debt on the study countries differs depending on the type of debt – domestic or foreign – and the period considered. In Zambia, while domestic public debt negatively impacted economic growth, its foreign counterpart had a positive impact, both in the

short and long run. In the case of Zimbabwe, domestic and foreign public debt harms economic growth, irrespective of the period of analysis. Finally, in South Africa, domestic public debt has a positive impact on economic growth in the short run only, while foreign public debt lowers economic growth, in the long run only. In view of Model 2's results in the study countries, the variations in the composition of public debt (domestic or foreign) have a strong bearing on each country's economic performance.

The results for Model 3 have been mixed across the study countries and were largely time-variant. In Zambia, public debt service negatively impacted economic growth in the short run only. In the case of Zimbabwe, the impact of public debt service on economic growth was negative in the short run and positive in the long run. In line with the public debt-economic growth neutrality hypothesis, public debt service had no significant impact on economic growth in South Africa, and the result applies both in the short and long run.

Finally, the Granger-causality results for Model 4a indicate that the direction of causality is from economic growth to public debt in the study countries, in the short run. While economic growth Granger-causes public debt in Zambia, in Zimbabwe and South Africa, public debt and economic growth are not causally related, in the long run. The results of Model 4b were consistent with the Ricardian Equivalence hypothesis, in which there is no causality between public debt service and economic growth in all the study countries.

CHAPTER 8

CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

This chapter summarises the study and provides conclusions and recommendations based on the results presented and discussed in Chapter 7 and is structured as follows: Section 8.2 gives an overview of the entire study; Section 8.3 briefly outlines the main findings of the study; Section 8.4 presents the study conclusions and policy recommendations. Finally, section 8.5 presents highlights of the possible limitations of the study and suggests areas for further empirical exploration.

8.2 Overview of the study

This study investigated the public debt, public debt service and economic growth nexus in Zambia, Zimbabwe and South Africa. This research discussed the trends, reforms and challenges that shaped the evolution of public debt, public debt service and economic growth and reviewed the theoretical and empirical literature on the subject.

In each of the three selected study countries, it examines five specific objectives:

(1) the impact of aggregate public debt on economic growth;
(2) the relative impact of disaggregated public debt (domestic and foreign) on economic growth;
(3) the impact of public debt service on economic growth;
(4) the causality between aggregate public debt and economic; and
(5) the causality between public debt service and economic growth.

This study tested five hypotheses, which are:

(1) aggregate public debt negatively impacts economic growth in the selected three Southern African countries;
(2) domestic and foreign public debt negatively impacts economic growth in these Southern African countries;
(3) public debt service negatively impacts economic growth in these countries;

(4) there is a unidirectional causal flow from aggregate public debt to economic growth in the study countries; and
(5) there is a unidirectional causal flow from public debt service to economic growth in these countries.

The study applied an individual case studies approach, and the three selected countries in this study were Zambia, Zimbabwe and South Africa. The choice of the countries was motivated primarily by the differences and similarities in their approaches regarding the adoption of public debt, public debt service and economic growth reforms, and hence the sizes and structures of their debt and economies. Firstly, South Africa is in the upper-middle-income category, while Zambia and Zimbabwe are in the lower-middle-income and low-income categories, respectively. Secondly, South Africa mostly depends on domestic public debt rather than foreign public debt, which is in direct contrast to the case of Zambia and Zimbabwe. Lastly, the chosen three countries are among the few Southern African countries with adequate and reliable time-series data to undertake the investigations.

In the empirical examination, the study utilised four models [three impact models – Models 1, 2 and 3; and one causality model – Model 4]. Model 1 explores the impact of aggregate public debt on economic growth in Zambia, Zimbabwe and South Africa. Furthermore, in Model 1, the regressand economic growth (y) is explained by seven explanatory variables, namely, public debt (PD), investment (I), labour (L), fiscal balance (FB), trade openness (TOP), savings (S) and terms of trade (TOT).

Model 2 tests the relative impact of domestic and foreign public debt on economic growth in the selected countries. In this model, Model 2, the regressand economic growth (y) is explained by domestic public debt (DPD) and foreign public debt (FPD), and six other control variables, which are investment (I), labour (L), fiscal balance (FB), trade openness (TOP), savings (S) and terms of trade (TOT).

Model 3 investigates the impact of public debt service on economic growth. In this model, the dependent variable (economic growth (y)) is explained by public debt service (PDS), investment (I), labour (L), fiscal balance (FB), trade openness (TOP), savings (S) and terms of trade (TOT).

Finally, in Model 4, the Granger-causality between aggregate public debt and economic growth (Model 4a), and between public debt service and economic growth (Model 4b) is tested within a multivariate setting. Model 4 uses fiscal balance (FB) and savings (S) as the intermittent variables such that the multivariate Model 4a consists of public debt (PD), economic growth (y), fiscal balance (FB), and savings (S), while the multivariate Model 4b consists of public debt service (PDS), economic growth (y), fiscal balance (FB), and savings (S).

The ARDL bounds testing approach to cointegration determines the cointegration for Models 1, 2, 3 and 4. The study used this approach due to its superior characteristics over alternative conventional cointegration methods. It used three stationarity tests, namely, the DF-GLS, PP and PPURoot, to determine the order of integration of all the variables in the specified models. Models 1, 2 and 3 used the ECM-based ARDL model to examine the impact of public debt and public debt service and economic growth. Finally, Model 4 employs the ECM-based Granger-causality test to observe the dynamic causality between aggregate public debt and economic growth (Model 4a), and between public debt service and economic growth (Model 4b).

8.3 Summary of the empirical findings

The overall empirical findings of the four models used in this study can be summarised as follows:

(1) The impact of aggregate public debt on economic growth (Model 1) varies significantly depending on the timeframe and study country.

The results of Model 1 for Zambia reveal that aggregate public debt has a positive impact on economic growth, irrespective of whether the impact is estimated in the short or long run. This finding, although contrary to the study expectations, compares favourably with other previous studies on the topic, such as Spilioti and Vamvoukas (2015) in Greece and DeLong and Summers (2012) in the United States of America.

In Zimbabwe and South Africa, aggregate public debt negatively impacts economic growth, both in the short and long run. This result is in line with empirical evidence from Mhlaba and Phiri (2019) for South Africa, Gómez-Puig and Sosvilla-

Rivero (2018) for 11 European countries, and Huang *et al.* (2018) for 70 advanced and emerging countries.

(2) The empirical results for Model 2 in the study countries also vary considerably depending on the type of government debt (domestic or foreign) and whether the analysis is in the short or long run.

In Zambia, the results show that while foreign public debt positively impacts economic growth, domestic public debt has a negative impact. The negative impact of domestic public debt on economic growth is not unique in Zambia and consistent with the finding in Akhtar and Hassan (2012) for Bangladesh. Although the results for foreign public debt in Zambia are contrary to the study expectations, the findings in Akram (2011) for Pakistan support this outcome.

In the case of Zimbabwe, the relative impact of domestic and foreign public debt on economic growth is negative, and the result applies irrespective of whether the impact is in the short or long run. This finding suggests: (1) domestic credit markets in Zimbabwe remain underdeveloped so that government borrowing could be crowding out private investment through credit rationing and high cost of capital, leading to depressed, physical capital build-up in this country; and (2) foreign public debt cannot be invested in highly tradable and productive sectors with high returns in the country.

Lastly, in South Africa, domestic public debt was positively related to economic growth but only in the short run. These results are contrary to expectation, but consistent with findings reported in studies such as Akram (2016) for four South Asian countries (Bangladesh, India, Pakistan and Sri Lanka), Akram (2015) for Pakistan, Bua *et al.* (2014) for 36 low-income countries and Adams and Bevan (2005) for 45 developing countries. However, in the long run, the impact of foreign public debt on economic growth was negative. The empirical results could suggest that the domestic capital markets in South Africa are relatively well developed and foreign public debt is proportionally lower than domestic public debt, compared to Zambia and Zimbabwe.

(3) The results of Model 3 in the study countries are mixed. Model 3 provides evidence of negative, positive and no relationship between public debt service and economic growth.

In Zambia, the negative impact of public debt service on economic growth is confirmed in the short run only, in the long run, the impact is insignificant. The short-run negative relationship is consistent with Weeks (2000) and Savvides (1992), while the long-run neutrality is anchored by Akram (2016; 2015) and Jalles (2011).

In the case of Zimbabwe, although the impact of public debt service on economic growth is negative in the short run, in the long run, it was positive. The confirmed positive relationship between public debt service and economic growth in Zimbabwe is not only uncommon and unexpected in this study, but also contradicts the theoretical underpinnings on this subject – particularly the public debt overhang. This finding in Zimbabwe suggests a net outflow of financial resources in the short run. However, in the long run, the clearance of protracted public debt arrears and principal amounts could have the following positives: (1) an increase in the country's international creditworthiness – which increases both the public and private sectors' access to cheap lines of credit; and (2) an increase in financial grants of the country from IFIs, or new loans on concessional terms.

Finally, in South Africa, the study found that public debt service had no relationship on economic growth whatsoever. The results for South Africa are consistent with those obtained by Akram (2016).

(4) The empirical results regarding the direction of causality between aggregate public debt and economic growth (Model 4a) indicate that it is economic growth that Granger-causes public debt. However, in the long run, economic growth prevailed in the case of Zambia only where economic growth Granger-causes public debt. In contrast, in Zimbabwe and South Africa, no causality was confirmed. The results of the Granger-causality test between public debt service and economic growth (Model 4b) in the study countries support the neutrality of public debt service on economic growth. This shows that there is no causality between public debt

service and economic growth, irrespective of whether the causality test is in the short or long run.

8.4 Conclusion and policy recommendations

In line with the findings from this study, the following conclusions and policy recommendations are suggested:

(1) This study reveals that the impact of aggregate public debt on economic growth is not the same in all the study countries – Zambia, Zimbabwe and South Africa. While the impact of aggregate public debt on economic growth is positive in Zambia, in Zimbabwe and South Africa, it is negative and statistically significant, irrespective of whether the analysis is in the short or long run. Given these findings, the study recommends that policymakers in Zambia should continue utilising borrowed public funds to expand the country's production base, diversifying the economy and growing the export sector. In Zimbabwe, the study recommends the need for deep structural changes in public debt management. This is likely to reduce the country's public debt burden to sustainable levels and enhance financial and macroeconomic stability. Finally, in South Africa, the study recommends continual improvement in public finance management policies and the reduction in public debt levels to within sustainable levels since high public debt leads to subdued economic growth rates.

(2) Regarding the impact of disaggregated public debt on economic growth, the findings were unique to each country, depending on the type of government debt and period of analysis. In Zambia, while foreign public debt has a positive impact on economic growth, domestic public debt has a negative effect. In Zimbabwe, the relative impact of domestic and foreign public debt on economic growth is negative, and the result applies regardless of whether the analysis is in the short or long run. In South Africa, domestic public debt is positively related to economic growth but only in the short run, while the impact of foreign public debt on economic growth is negative but only in the long run. Therefore, in Zambia, the study recommends that the government limits its reliance on domestic capital markets as this impedes economic growth. The policymakers may also consider growing the domestic capital markets by introducing new strategies, for example,

the introduction of new government debt securities to diversify the investor base by attracting more investors. More so, the government is encouraged to use all foreign debt in financing long-term investment projects that should translate into economic growth.

In Zimbabwe, both domestic and foreign public debt negatively affect economic growth. Hence policymakers should formulate policies to limit the government's borrowing from the domestic financial sector and also institute policies that expand the domestic capital markets in the country. More so, borrowed government funds, whether from domestic or foreign sources, should be channelled towards long-term, high returning investments, which can stimulate economic growth.

In the case of South Africa, the study recommends that the country continues implementing domestic public debt policies to improve economic growth. However, the study cautions the country against growing foreign public debt to finance its increasing expenditure as this has adverse effects on economic growth in the long run. Policymakers in South Africa, should, therefore, manage foreign public debt appropriately to avoid it reaching unsustainable levels.

(3) The study revealed that the impact of public debt service on economic growth is distinctly different in each country. In the short run, the impact was negative in Zambia and Zimbabwe, and positive in Zimbabwe in the long run. In South Africa, public debt service has no impact on economic growth whatsoever. Thus, in Zambia, policymakers should consider adopting initiatives to improve revenue generation, mostly in the short run.

In Zimbabwe, policymakers should consider fiscal and financial policies that promote a constant supply of long-term finance, long-term fixed investments, and extension of a government securities maturity structure to ensure sustainable short- and long-term public debt service expenditure. More so, in Zimbabwe, where public service positively relates to economic growth in the long run, the study further recommends the consolidation and strengthening of non-distortionary revenue mobilisation reforms in servicing existing public debts.

(4) The causality results show that economic growth Granger-causes public debt in the short run in the study countries. However, in the long run, the causal relationship varied. While economic growth Granger-causes public debt in Zambia, in Zimbabwe and South Africa, no causality was confirmed, in the long run. Therefore, the study recommends policymakers in Zambia, Zimbabwe and South Africa to consider growth-enhancing policies in the short run, since poor economic performances may lead to high public debt levels.

(5) With regards to causality between public debt service and economic growth, the results show no causality between public debt service and economic growth in these countries, irrespective of whether the causality analysis is carried out in the short or long run.

8.5 Limitations of the study and suggestions for further empirical research

Despite applying due diligence in undertaking this research to ensure that the study results are credible, robust and reliable, this study may have specific limitations.

First, to avoid model misspecification and increase the predictive power of the models, the study included six control variables in Models 1, 2 and 3. As a result of these control variables incorporated in the specified impact models, Models 1, 2 and 3 presented an adequate representation of the nature of the impact of public debt (domestic and foreign) and public debt service on economic growth. However, other important variables could be included, such as, but not limited to, quality of public sector institutions and macroeconomic uncertainty. These variables were omitted in the study due to the unavailability of reliable time-series data. As the data of these and other variables become available, it would be ideal for future studies on the subject to establish whether the results would change significantly after incorporating these variables.

Second, this study extends the current debate on the public debt-economic growth nexus by empirically testing the impact of public debt on economic growth, and simultaneously estimating the relative impact of domestic and foreign public debt on economic growth. Some theoretical arguments suggest that the relationship between public debt and economic growth could be nonlinear. Hence, it would be interesting

for future studies to test the existence (or nonexistence) of nonlinear relationships between public debt and economic growth using recently developed econometric techniques – and determine the respective threshold points in each study economies. Future studies may also consider testing the underlying relationships in this study by applying panel data analysis and ascertaining if the results change significantly.

In summary, although the limitations outlined above could have impacted the empirical results and evidence, their effects are assumed to be minimal and not significantly affecting the theoretical and empirical outcomes of this study.

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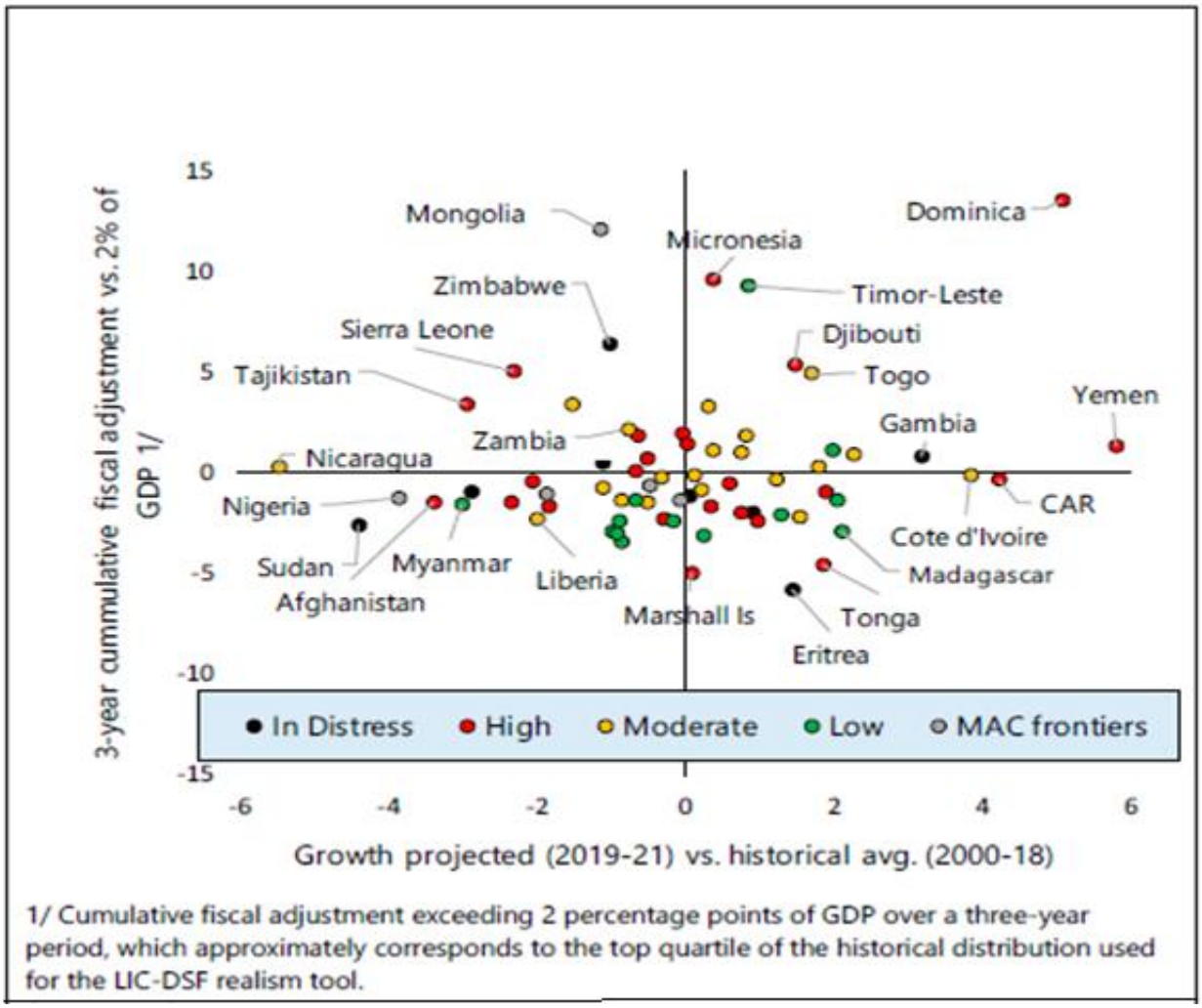
APPENDIX

The evolution of public debt vulnerabilities in lower income countries:



Source: Adopted from IMF (2020a: 30)